CHAPTER 6

DISCIPLINE IMPACTS ON PUBLIC HEALTH, SAFETY AND WELFARE

One of the legislatively defined study goals was to consider how changes to existing laws regulating engineers would affect the public health, safety and welfare. To assess this requires some measure of the degree to which the public health, safety and welfare are affected by the current licensing system. In seeking measures of relative impact on public health, safety and welfare, ISR looked for court records of cases involving engineers. According to Forum participants and others, most lawsuits are settled out-of-court, leaving no public record. Moreover, unlike medicine, there is no requirement that court decisions involving licensed engineers be reported to the PELS Board. Thus, there is no connection between civil redress for harm and professional accountability.

At the Forum on Engineering Licensing 2002, ISR posed two questions: "Do engineering disciplines differ in the degree to which their negligent practice could adversely affect the public health and safety?" and "Are there any data that can be used to make this determination?"

Participants seemed to agree that all engineering disciplines affected public health, safety and welfare and that it was not possible to quantify discipline variations in the level of impact. Several participants believed that an error made by practitioners of some engineering disciplines would injure more people while an error made by others would affect fewer. For example, structural engineers who design bridges and buildings used by millions of people may have a greater impact on public health, safety and welfare than control systems engineers who, in designing manufacturing procedures that affect the efficiency and effectiveness of a process, may have less impact on the safety of the product. Several participants also noted the omission of welfare in the question, encouraging its inclusion because -- on the positive side -- engineering also influences quality of life, economic prosperity and other aspects of public welfare.

Data that might differentiate engineering disciplines are lacking because the resolution of incidents is often private (e.g., out-of-court settlements and insurance claims) and no single agency is responsible for tracking engineering-related incidents of public harm, determining culpability and disciplining those involved. Moreover, participants argued, assigning responsibility for accidents that harm the public would be a challenging undertaking because they could occur for a variety of reasons besides incompetent engineering, including operator error, material or equipment failures, and management or supervisory decisions. In projects involving many engineering disciplines, it would be necessary and difficult to apportion responsibility for the incident across the several disciplines. Nevertheless, regulatory agencies and the courts routinely accomplish these difficult tasks when airplane accidents, common automotive failures or medical errors occur.

ISR identified two sources of data that offered the possibility of distinguishing the health and safety impacts of different engineering disciplines. The first was insurance data on fees collected by their insured and the number and cost of claims against them. The argument would be that disciplines posing a greater threat would generate more claims and more expensive claims than those with less impact. This is overly simplistic because the type of client also influences the filing of claims and client type may vary by discipline. Engineering disciplines also vary in their exposure to suit because of the location of their employment. Employment by governmental agencies or industrial corporations may limit exposure, thereby reducing the number of claims for some disciplines. Therefore, without the ability to compute a rate of claims

relative to the number insured, it isn't possible to fully measure the impact of those disciplines offering services directly to the public. With a full data set, it would be possible to control the effects of client type and other variables in assessing the number and cost of claims.

The second data source was information on the number and types of complaints against engineers lodged with the Board for Professional Engineers and Land Surveyors. One would expect that parties filing insurance claims would differ from those filing complaints with state boards, and that the issues raised and the costs of misconduct would be less serious in Board complaints. Nevertheless, both data sets should flesh out the identity of the consumer of engineering services and offer a chance to determine whether disciplines vary in the type of client served. The first part of this chapter describes the problems associated with accessing insurance data -- possibly the most direct measure of different health and safety impact -- and considers what can be learned from the limited information available. The second part of this chapter analyzes complaint data for California and four comparison states.

Insurance Data

Some of the more important costs of incompetency -- and some of the more important benefits of skill -- in medicine, law or engineering may resist measurement. But the extent to which different engineering branches generate insurance claims, variability in costs associated with events described in those claims, and the cost of liability insurance for engineering firms would seem to be decent, though not perfect, indicators of public harm. With the idea of testing whether practice and title branches can be distinguished in their degree of threat to public health and safety, ISR sought first the average cost of liability insurance for different types of engineers from the California State Department of Insurance.

The response typified other attempts at accessing data that could be used to inform legislative policy decisions. The department does not summarize insurance rates for public use nor will it accept telephone or mail requests that file information be copied and sent. Interested parties must appear in person at a San Francisco office and be prepared to look up by insurance firm their established rates. Since -- in addition to discipline --rates vary by size of firm, the type of projects specialized in, their relative liability exposure as measured by client fees generated, claims history, geographic area and risk management practices, an average rate by discipline would need to be provided by the insurance company or require complicated computations by insurance department staff.

Staffing constraints at the Department of Insurance and more generally at licensing boards and agencies in California and its comparison states are undoubtedly one reason behind the limited access. The maintenance of appropriate and useful records is not a priority in many states and agencies.

ISR then turned to the insurance companies themselves, specifically DPIC and Victor O. Schinnerer, two companies that reportedly insure most of the nation's engineers. DPIC had recently released data on their analysis of 8,687 claims filed between 1996 and 2000, representing $396 million in claims payments. This data was summarized in an article in *Engineering Time*s.[1] ISR requested and received a power point presentation based on this data that had been presented to a risk management conference for engineering and architectural firms. The power point presentation also included a broader analysis of over 19,000 closed

[1] National Society of Professional Engineers, Volume 24, Number 4, April 2002, page 3 .

claim and loss prevention files from 1989 to 2001, representing $725 million in claim payments. A request for more precise information on the number of claims, claim dollars paid, and fees earned by discipline, type of claim and state was directly refused by Schinnerer and indirectly refused by DPIC, who stopped responding to phone and email messages after providing the publicly available data.

The information provided and described below suggests what might be done with more complete data.

Claims and Claim Dollars Relative to Fees Earned

Table 6.1 compares the proportion of fees earned by specific practice act firms (civil/surveying/environmental, structural, mechanical and electrical), architectural firms, and "other" presumably engineering firms with the proportion of claims generated and claim dollars accounted for by each type of firm. This suggests that civil/surveying/environmental engineering firms have fewer and less expensive claims than the other disciplines relative to their liability exposure as measured by fees generated. Conversely, structural engineering firms account for almost twice as many claims as expected given their proportion of fees generated (11% vs. 6%) and almost three times the proportion of claim dollars (16%). Architecture is the only other described discipline to generate more claims and claim dollars than expected by their amount of exposure (35% of fees generated, but 42% of claims and 44% of claim dollars). Mechanical engineering and the "other" disciplines are proportionately represented across the board, while electrical engineering generates fewer claims and claim dollars than expected (4% of fees generated, but only 2% of claims and 1% of claim dollars). (Table 6.1)

One tentative inference from these comparisons is that structural engineering has a more negative impact on public health and safety than civil and electrical given their liability exposure as measured by client fees. Structural engineers generate more claims and claim dollars relative to their exposure while civil and electrical engineers generate fewer. Mechanical engineering and the "other," presumably title act, disciplines are generally neutral, generating claims and claim dollars in rough proportion to their exposure. Thus, protection of public health and safety could not be used as a basis for practice vs. title protection. Two of the three practice disciplines (civil and electrical) have less impact in terms of insurance claims than their exposure leads us to expect while the number of claims and claim dollars are proportional for mechanical engineering and the title act disciplines.

Types of Damages

The types of damages vary by discipline. Economic loss constitutes the largest group of claims for civil, mechanical and electrical engineering (46%, 51% and 57% respectively). Property damage is the second largest group for these three disciplines (39%, 39% and 28% respectively) with non-construction bodily injury third (10%, 7% and 9%). In contrast, the most frequent type of claim for structural engineering is property damage (47%); economic loss makes up another 40%. Civil and electrical have more non-construction bodily injury claims (10% and 9% respectively compared with 6% and 7% for structural and mechanical). (Table 6.2)

Over half of claims dollars for civil and mechanical engineering firms are in response to claims of economic loss (53% and 56% respectively). In electrical engineering, the proportion of claims dollars are equally split between economic loss and property damage (42% each), while more claim dollars go for property damage than economic loss in structural engineering (45% vs.

41%). Civil, mechanical and electrical require more claim dollars for non-construction bodily injury than structural (13%, 10% and 14% compared with 7%). (Table 6.2)

It is important to note that not all claims arise out of health and safety issues. Contract disputes, fraud, incompetence, and poor management generate claims. DPIC notes four non-technical factors influencing claims, including: negotiation and contracts (13% of claims, 17% of claim dollars), client selection (16% of claims, 18% of claim dollars), project team capabilities (24% of claims, 21% of claim dollars) and communication (27% of claims, 22% of claim dollars). The largest components of project team capabilities are unqualified design staff assigned to project and unqualified project manager.

Suing Parties

All practice act disciplines were more likely to be sued by owners or clients, ranging from a high of 72% for mechanical engineers to a low of 51% for civil. Civil and structural engineers were more apt to sustain third party claims (33% and 25% respectively) than electrical and mechanical engineers (with 21% and 13% third party claims). Although suits by contractors or subcontractors are less frequent for all disciplines, electrical and civil engineers experience these claims somewhat more often than mechanical and structural engineers (15% and 13% vs. 11% for the other two). (Table 6.3)

Owner/client claims are relatively more expensive for electrical engineers than for mechanical and civil engineers. Claims against electrical engineers require 20% more dollars than their proportion of claims suggests while claims against mechanical and civil engineers require only 10% more dollars. Claims by owner/clients against structural engineers require fewer dollars than the proportion of claims suggests (61% of dollars vs. 62% of claims). Third party claims are more expensive for structural and mechanical engineers (26% of dollars vs. 25% of claims for structural engineers and 15% of dollars compared with 13% of claims for mechanical). They are much less costly for civil engineers (27% of dollars but 33% of claims). In suits by contractors or subcontractors, claims are more expensive for civil and structural engineers (14% of dollars vs. 13% of claims for the former and 13% of dollars and 11% of claims for the latter), but much less expensive for mechanical and electrical engineers (6% of dollars for each discipline compared with 11% and 15% of claims respectively). (Table 6.3)

Project Type

The power point presentation described the proportion of claims, dollars and fees accounted for by different project types. The mix of project types varied by discipline. Although not specifically stated, the implication is that the types shown are the most frequently occurring project types for a given discipline. Absent a complete list of project types, it is difficult to test that implication. The inference would be incorrect if the project types shown in graphs for the five disciplines (structural, civil, mechanical, electrical and architectural) are combined into a single list that includes all possibilities. This is because, in some cases, the types shown accounted for half or less of the total claims, dollars or fees for a given discipline. A subdivision of the remaining claims, dollars or fees into the project types omitted from a graph would result in greater proportions than for some included in the graph. It is, therefore, more likely that all possible project types is a much longer list.

Nevertheless, there are some puzzling omissions. One would assume that structural engineers would be sufficiently involved in the construction of highrise buildings to generate at least 2% (the least frequent category for structural engineering firms) of claims against structural

engineering firms. Perhaps most of the structural engineering work for high rise buildings occurs within architectural firms. In this study, discipline describes the firm and not the claim. Therefore, a structural claim against an architectural firm would be counted under architecture.

Claims against structural engineering firms are most likely to involve residential and "low-rise" commercial/industrial projects (18% and 12% respectively). The proportion of claims growing out of residential projects is two and a half times the proportion of fees generated by these projects, while the costs involved are one and a half times greater. On the other hand, "low-rise" commercial/industrial buildings generate half as many claims and involve a fourth as many dollars as fees generated by this type of activity. This illustrates a point made by DPIC that client selection is one of the four most important non-technical factors influencing claims. There are fewer claims and even fewer dollars involved given the amount of exposure on commercial/industrial projects; but a lot more claims and somewhat more dollars involved in the more limited exposure on residential projects, with presumably less experienced owner/clients. (Table 6.4)

The pattern is essentially similar for the other practice act disciplines. For civil and electrical engineering firms, residential condos projects -- and for electrical engineering firms only -- residential projects result in far more claims and claim dollars than the fees generated by them. In all four disciplines, "low-rise" commercial/industrial projects generate fewer claims and claim dollars than the fees generated. It appears that the type of project, and by inference, the type of client, is an important factor in claims. Had DPIC shown the parallel table for the "other" disciplines -- that include what California calls the title act disciplines -- it would have shed some light on whether the pattern is any different for these disciplines.[2] Whether or not licensing affects claims cannot be discerned from this data; but it is clear that the type of project and client have a significant impact.

For civil engineering firms, residential projects are a wash with claims and claim dollars matching the amount generated in fees (20%). The projects accounting for the greatest proportion of income (26% from roads and highways) generate far fewer claims and involve even fewer claims dollars (14% and 11% respectively). Conversely, wastewater, sewage and water treatment systems projects are expensive in terms of claims and claim dollars, accounting for three times as many claims dollars as fees (25% of claims dollars, but only 8% of fees generated). Since the clients involved in both types of projects are probably public agencies, it would be useful to know the reasons for the different ratios of claims to fees. These might be discernible from a more in-depth analysis of the data possessed by both insurance companies. Without the companies' cooperation, this isn't an option for this report. (Table 6.4)

Mechanical engineering firms involved in claims receive half of their income from "low-rise" commercial/industrial projects (33%) and construction at schools, colleges and universities (17%). However, their work in the private sector generates far fewer claims and claim dollars (12% and 9% respectively) than the public sector projects associated with education (22% and 23%). Hospitals follow the public sector pattern, generating 8% of fees, but 12% of claims and claim dollars, while malls repeat the private sector pattern, generating fewer (2% and 1% vs. 5% of fees). High-rise projects break the mold, generating 3 times the amount of fees in claims and claim dollars (3% of claims and claim dollars vs. 1% of fees). (Table 6.4)

Electrical engineering firms are far more involved in claims than their proportion of fees leads one to expect. The proportion of claims and claim dollars outweigh fees in all types of projects

[2] ISR requested this data from DPIC but did not receive it.

except "low-rise" commercial/industrial ones. Both public and private sector projects spell trouble for electrical engineering firms. But the types of projects covered include only a third of the fees generated by this type of firm. Without knowing the criteria for inclusion of project types, it is difficult to conclude that electrical engineering firms are at greater risk. DPIC's initial table, "Comparative Claims Experience," presumably including all project types, finds the greatest imbalance between claims, dollars and fees among structural engineers. Their firms generated 6.7% of fees, but accounted for 11.3% of claims and 16.1% of claims dollars. This imbalance is not reflected in the data summarized in Table 6.4 where the project types selected for inclusion suggest a more benign balance of claims and fees: these projects accounted for 56% of the collected fees, but only 53% of claims and 42% of claims dollars. The ratios are similarly benign for civil and mechanical, but quite the reverse for electrical engineering firms *for the projects included in the power point graph*. In the "Comparative Claims Experience" graph, electrical engineering firms have a positive ratio: although they generate 4.2% of fees, they account for 2.1% of claims and 1.0% of claims dollars. (Table 6.4)

What the data do not tell us is how often different types of engineers are sued. No information was provided that allowed us to compute a claim rate for each type of engineer. Without knowing how many engineers in specific disciplines are insured, there is no way to compute a rate of involvement in claims and in so doing determine whether some disciplines generate more than others. The comparison with fees generated is an indirect way of assessing whether a given discipline is more or less involved than their exposure would indicate. But the firms that generate claims may differ in important ways from firms that do not. The unit of analysis is also imprecise. The firm is presumably the unit of analysis; but there is no way to know how many engineers are employed by these firms and what disciplines they may represent.

Complaint Data: California

This section focuses on a data file maintained by the California PELS Board that summarizes complaints lodged with the Board against licensed and unlicensed engineers. This database includes the:

- Opening and closing date of the complaint
- Type of engineering license (or lack of license) held by the subject of the complaint
- Source of the complaint
- Category of alleged violation
- Section of the Business and Professions Code or California Code of Regulations allegedly violated, and
- Closing code for the case.

Cases summarized in this section were opened between 1/7/91 and 10/19/01, covering ten full years and two partial years of complaints lodged with the Board. The number of complaints averaged 249 per year for the full ten-year period, ranging from a low of 180 in 1993/94 to a high of 316 in 1996/97. Complaints are roughly equally distributed between professional engineers and unlicensed persons (43% vs. 39% respectively) with land surveyors accounting for the remaining 18%. (Table 6.5)

Since land surveyors are not included in the Title Act Study, they were removed from the complete complaint data file described in Table 6.5. Cases were also excluded if the subjects were unlicensed persons alleged to have violated only the Professional Land Surveyors Act and no other sections related to engineering. Table 6.6 summarizes the number of subjects licensed in engineering or land surveying, the number who were not licensed in either and the section or code allegedly violated. Strike-outs identify the cases omitted from further analysis.

Engineering discipline. Most of the complaints are against either civil engineers (43%) or unlicensed individuals (45%). (Table 6.7) The number of complaints against civil engineers is unexpected when compared to the discipline distribution of employed engineers in the state. Civil engineers constitute only 15% of the state's engineering work force. Even if the "other" category (18% of the workforce) is assumed to contain mainly civil engineers, they would still be over-represented in the complaint process. (Table 6.8) In contrast, there are very few complaints against electrical and mechanical engineers (1 and 2% respectively) in comparison to their percentage of the work force (30% and 11% respectively). The pattern is similar when the distribution of complaints is compared with the discipline profile of registered engineers. Civil, geotechnical, structural and traffic engineers are significantly over-represented in complaints against registered engineers while electrical, mechanical and the remaining title act disciplines are all under-represented. (Table 6.9)

The fact that the three practice act specialties are employed in different industries may have an effect on complaint rates. Nationally, electrical and mechanical engineers are largely employed in industrial corporations (78 - 80%) while civil engineers are more apt to be employed in engineering and architectural services (51% in 2000). Electrical and mechanical engineers in California have a similar industry profile (with 82% and 76% employed by industrial corporations), and with less individual exposure may generate fewer complaints. California's civil engineers are less likely to be employed in engineering and architectural services (37% vs. 51% nationally) but their involvement in consulting is much greater than electrical and mechanical engineers (6% and 19% respectively). (Table 6.10)

This rationale, however, is not supported by the insurance data discussed earlier in this chapter. Mechanical and electrical engineering firms are more apt to be sued by owner/clients than civil engineering firms (72% and 60% of claims respectively compared with 51% for civil engineers). (Table 6.3) Civil engineering firms are more often sued by third parties (33% vs.13% and 21% for mechanical and electrical engineers). In all likelihood, those who file complaints and those who file insurance claims probably differ. Neither group may accurately reflect the client base of an engineering discipline.

Another possible explanation for varying complaint rates between disciplines is that they engage in different types of projects that may affect exposure to complaints or claims. The insurance claim data provides some information on project type, but the data are incomplete making discipline comparisons difficult. The data indicate the proportion of claims against firms associated with particular disciplines that involve specific types of projects. What is unknown is the proportion of each project type that generates a claim. The only indirect measure is a comparison of the proportion of claims in relationship to the proportion of fees generated by each type of project. Civil engineering firms work on some project types that mechanical and electrical engineering firms apparently do not (roads and highways, wastewater, sewage and water treatment systems). In the former, the proportion of claims is half that of the proportion of fees generated by roads and highway projects. In the latter, the proportion of claims is double the proportion of fees generated. Thus, various project types for a given discipline yield different claims/fee ratios. On the other hand, civil, mechanical and electrical are all involved in building commercial/industrial buildings of nine stories or less and in all three disciplines, the claims/fee ratios are positive -- that is, more fees are earned than claims generated. In other shared project types, the claims/fee ratios are in different directions. Civil engineers are heavily involved in residential projects, but the claims and fees generated are very similar (21% of claims and 20% of fees). For electrical engineers, residential projects are much more damaging -- generating six times the number of claims as fees and 15 times the number of claims dollars. (Table 6.4)

It is therefore difficult to argue that particular types of clients or projects necessarily predict complaints or insurance claims. Other data collected during the course of this study suggest that civil engineering may be a broader discipline, encompassing a range of specialties (water, transportation, environmental, structural, geotechnical) and that the lack of specialization may undermine competence. The violation categories offer some support to this interpretation: a higher percentage of civil engineers are charged with incompetence/negligence than is true for electrical or mechanical engineers (70% vs. 48% and 28% respectively). Geotechnical and structural engineers -- with civil engineering as their initial license -- have a similarly high proportion charged with incompetence/negligence (69% and 75% respectively). Exam pass rates are somewhat consistent with this information. However, both civil *and* electrical have significantly lower pass rates in all or most years between 1997 - 2001 while pass rates for mechanical engineering have been within the norm for the comparison states in all years except the 2001 HVAC/refrigeration exam. Yet there are only 4 complaints lodged against the most numerous category of engineers in the state (electrical).

In short, there is no clear explanation for the concentration of California complaints on civil engineers.

Almost all licensed engineers who are the subject of a complaint hold a single license (95%). Eleven hold multiple practice act licenses (ten, civil and mechanical and one, electrical and mechanical). The remaining 46 combine a title act license with a practice act license or title

authority; most of these (36) are traffic engineers or other title disciplines (6) who also hold a civil license. Three control systems engineers have electrical or mechanical licenses and one fire protection engineer has a structural license. (Table 6.11) For the detailed description of disciplines shown in the first panel of Table 6.7, individuals with two licenses are shown in both categories. Since there are so few complaints against engineers in the Title Act disciplines, categories were created as shown in Table 6.12.

Source of complaint. Half of all complaints were initiated by private parties (individual and corporate clients). The Board is the second largest source of complaints, accounting for 39%. Government agencies, licensees and trade organizations make up the rest. Board complaints outnumbered the public's in only two years: 1994/95 and 1997/98. (Table 6.7) In the latter year, an unusual number of complaints were lodged against traffic engineers for engaging in land surveying. (Table 6.7 and 6.25)

The source of the complaint was related to the nature of the complaint as measured by the violation category. The most important issue for public complainants was competence/negligence (56%), while the Board was more concerned with exam subversion (53%) and unlicensed activity (27%). Licensees shared the Board's concern with unlicensed activity (56%) and secondarily with competence/negligence issues (32%), while the reverse was true of "other government agencies" that were more concerned about competence/negligence issues (51%) and less about unlicensed activity (32%). (Table 6.13)

Type of violation. The complaint database contains two types of variables describing the nature of the alleged violation. One applies violation categories and the other uses the sections of the Business and Professions Code or the California Code of Regulations that were allegedly violated. Using the violation categories, the most common alleged violations were competence/negligence (37%), unlicensed activity (24%) and exam subversion (23%). Competence/negligence and unlicensed activity appear to have increased during the 1990s while exam subversion and fraud, deceit and misrepresentation appear to have decreased. (Table 6.14)

Using the code section charged to describe alleged violations, the most common section is §6775 (37%), which involves fraud, negligence or incompetence, breach of contract and conviction of a crime. Most of the complaint subjects (34%) are charged with subsection (b) – regarding fraud, deceit, misrepresentation, negligence, incompetence, and/or breach of contract. (Tables 6.15 and 6.16) Unauthorized practice or use of title in civil, electrical, or mechanical engineering or use of the titles of professional, licensed, registered or consulting engineer (26%) and exam subversion (23%) are the second and third most frequent alleged violations. The only other significant group of cases (14%) is charged with violating the Professional Land Surveyors Act (§8726-8792). (Table 6.15)

Table 6.17 shows the relationship between the two types of violation variables. For cases alleging incompetence/negligence, which is the most sizeable group of cases, it is not uncommon for a second type of alleged violation to be involved. Some of these cases allege both incompetence/negligence and contract issues, and others allege incompetence/negligence as well as fraud, deceit or misrepresentation. Perhaps in response to the fact that cases can involve more than one type of violation, §6775(b), which is the most frequently charged section, was restructured as of January 1, 2001. Three separate subdivisions were created to distinguish (b) fraud, deceit, and/or misrepresentation, (c) negligence and/or incompetence, and (d) breach or violation of contract. But since just 165 of the complaint cases described in this chapter were opened after the change to the section, these were not analyzed separately.

The second most common category of violation is unlicensed activity. Almost all of theses case are charged with §6787. Violation of the professional land surveyors' act is alleged more often in cases involving incompetence/negligence.

Closing code. A violation was identified in almost three out of five complaints (57%), while no violation was found in a fourth of them (28%). (Table 6.18) The Board was unable to pursue 8%, largely for insufficient evidence, and the remaining 10% of cases are not yet closed. When a violation was identified, the most common resolution was obtaining compliance (29%). A Board citation occurred in 6% of the complaints, 12% were referred, either to the Attorney General (9.8%) or District Attorney (2.0%). In two years -- 1992/93 and 1997/98 -- an unusual number of complaints were referred to the Attorney General's office (19% in the earlier year and 25% in the later one). (Table 6.18) These involved an overlap issue between land surveying and several branches of engineering. In 1992/93, civil and geotechnical engineers were charged with the unauthorized practice of land surveying; in 1997/98, traffic engineers were included as well. (Table 6.7 and 6.25)

The closing code varies significantly by source of the complaint and violation category. The largest group of complaints -- those initiated by the public -- are classified most often as no violation (38%) while the second largest group -- those initiated by the Board -- are most likely to result in Board action (66%). In only 11% of complaints initiated by the Board is no violation found. (Table 6.19) Among the four source categories with sufficient numbers for analysis, cases are more likely to remain open if they are filed by licensees (26%) or by an "other government agency" (21%) and least likely to remain open if they are filed by the Board (4.4%). (Table 6.19)

The most common closing code when fraud, competence/negligence or contractual issues are charged is that no violation is found (38%, 37% and 33% respectively). In cases of exam subversion and unlicensed activity, Board action is the most common response (91% and 39% respectively). (Table 6.20)

Complaint Characteristics by Engineering Discipline

Source of complaint. In general, complaints against the practice act disciplines come from the public while those against the title act disciplines and the unlicensed are more likely to come from the Board. The two title authorities (geotechnical and structural) have the highest proportion of complaints generated by the public (89% and 73% respectively), with civil somewhat lower (71%) and electrical still a solid majority (57%). The source of complaints against mechanical engineers is almost equally divided between the Board (48%) and the public (46%). The source of complaints against title act engineers is obscured by the fact that the Board filed 26 of 41 complaints against traffic engineers against a single individual. When these are removed, the public accounts for most complaints filed against title act engineers. (Table 6.21)

Complaint subjects with practice act only licenses were grouped for comparison with title act only subjects, those who had both types of licenses and those who had neither. This clarifies the relationship between type of license and source of the complaint. While the public initiates complaints against practice act only disciplines and practice/title combinations other than traffic (72% and 70% respectively), the Board initiates complaints against civil/traffic engineers (78%) -- including the individual referred to above -- and the unlicensed (65%). Complaints against title

act only disciplines are almost equally initiated by the public and Board (45% and 40% respectively).[3] (Table 6.22)

Violation category. The practice and title act disciplines also vary in the type of alleged violation. With the exception of mechanical engineering, competence/negligence issues are the most common in the practice act disciplines and title authorities (with 70% of alleged violations in civil, 48% in electrical, 69% in geotechnical and 75% in structural). Mechanical engineers are unique in the diversity of their alleged violations, which are almost evenly split among unlicensed activity, competence/negligence and fraud. Traffic engineering is the only title act discipline with enough cases to provide meaningful percentages and there, too, competence issues dominate (85%). (Table 6.23)

The disciplines are combined into mutually exclusive categories in Table 6.24. Competence issues dominate among complaint subjects with practice act only licenses and in any combination of practice and title aAct disciplines (practice act only-- 68%, civil and traffic -- 94%, and other practice/title combinations -- 60%). Subjects with title act only licenses are charged most often with unlicensed activity (40%), while the unlicensed are charged about equally with exam subversion (44%) and unlicensed activity (51%). Competence and contractual issues are the least frequent allegations in the title act disciplines (10% each). (Table 6.24)

Code section charged. When the separate disciplines are compared in terms of the specific code section violated, §6775(b) is cited most often, particularly for geotechnical (90%), structural (83%), civil (64%) and electrical (81%) engineers. Alleged violation of §6787 – especially §6787(a) – is much more common among complaints against mechanical engineers than for any other discipline. Section 6775 is still charged in a majority of cases against mechanical engineers (52%) but 36% of complaints against mechanical engineers allege violation of §6787. The charges are concentrated in §6787(a), which involves practice in another discipline (in this case civil or electrical engineering). Traffic engineers are primarily cited for violating the Professional Land Surveyors' Act (73%). A significant percentage (30%) of civil engineers are charged with this section as well. The unlicensed are charged with violating the Board rule against exam subversion (49%), practicing civil, electrical or mechanical engineering (36%) or representing themselves as licensed in these disciplines (12.6%) or as a registered engineer (7.1%). (Table 6.27)

Table 6.28 compares the combined practice and title act disciplines and the unlicensed in terms of the codes allegedly violated. The results are essentially the same as with the individual disciplines. Practice act complaint subjects are most often alleged to have violated §6775 (b) (fraud, deceit, misrepresentation, negligence, incompetence, and/or breach of contract) and the unlicensed are charged with violating §442 (exam subversion) and §6787 (practicing or representing themselves as practice act engineers). (Table 6.28)

Closing code. Complaints against the unlicensed close faster (with 6% still open) than those against geotechnical (21%), structural (16%), mechanical (13%) and civil (12%) engineers. (Table 6.29, top panel) Among the closed cases, violations are identified most often in complaints against the unlicensed (80%), and against traffic (74%), civil (51%), mechanical (48%), structural (39%) and geotechnical (34%) engineers. (Table 6.29, bottom panel)

When the disciplines are combined into mutually exclusive groups, the patterns are similar. The proportion of open complaints against practice act engineers is almost three times higher than

[3] With only 20 cases, the proportions for title act complaint subjects are unreliable.

the proportion among the unlicensed (13.5% vs. 5.8%). (Table 6.30, top panel) Violations are identified most often among the unlicensed (80%) and persons with multiple licenses in civil and traffic engineering (74%), but in slightly less than half (48%) of the closed cases against practice act engineers. Board action is the most common response when violations are identified against the unlicensed (84%), while referral to the Attorney General occurs most often among those with dual licenses in civil and traffic (81%). When violations are identified among practice act engineers, the response is equally split between Board action (40%) and referral to the Attorney General (40%). (Table 6.30)

Comparison of the Discipline Profile of Complaints and Insurance Claims

Complaints filed with state regulatory boards and insurance claims are two separate indices of engineering's effect on public health, safety and welfare. The nature of the harm is presumably less serious where complaints are concerned and some issues, like exam subversion and unlicensed activity, are unique to the regulatory process. Paid claims represent acknowledged damage, whether this involves bodily or economic harm. To make the data sets as comparable as possible, complaint cases involving only exam subversion or unlicensed practice and cases against unlicensed subjects were removed from this part of the analysis. Although the insurance companies do not specifically identify firms that are unlicensed, there may be some included with the "other" disciplines. With these adjustments and recognized limitations, the discipline distribution of complaints and claims was compared.

The discipline profile of complaints is very different from the profile of insurance claims. While most complaints are against civil engineers (80%), 44% of insurance claims are against civil engineering firms -- a proportion that is two and a half times the proportion of employed civil engineers in the U.S (17.3% in 2000).[4] (Table 6.31) In contrast, electrical and mechanical engineers are underrepresented in the complaint population (1.6% and 2.8% respectively), relative to their proportion of the claims population (3.6% and 14.1% respectively) and to their proportion among employed engineers (36.3% for electrical and 13.8% for mechanical). The proportion of insurance claims against mechanical engineers (14.1%) is roughly comparable to their proportion of employed engineers. Another 16% of complaints are against California's title authority disciplines, equally divided between geotechnical and structural engineering. The proportion of claims against structural engineers is more than double the proportion of complaints (19.5% vs. 8.1%). Since OES doesn't separately identify structural engineers, their involvement in claims can't be compared with their proportion in the employed population. Adding their proportion of claims to the proportion for civil engineers (19.5% plus 44.3% or 63.8%) means that claims generated by civil and structural engineers are 3.7 times their proportion among employed engineers. Thus, civil engineering, including structural, appears to pose a greater threat to public health, safety and welfare than electrical or mechanical engineering. (Table 6.31)

The number of complaints filed against engineers in the title act disciplines is lower than expected, given their proportion of employed engineers in California (4.9% of complaints vs. 17.8% in the state). The proportion of claims against all other engineers (including title act disciplines and perhaps some unlicensed firms) is roughly half that of their proportion among employed engineers nationally (18.5% of claims, but 36.2% of all engineers). Thus, in terms of

[4] The claims data provided by DPIC, a firm offering liability insurance to engineering firms nationally, presumably describes claims against engineers throughout the U.S. Assuming that to be the case, the appropriate comparison population would be employed engineers in the U.S. In an earlier section, California complaints are compared with the distribution of employed engineers in the state. DPIC did not respond to a request for clarification of the claims population.

complaints and insurance claims, the title act disciplines pose less of a threat to public health, safety and welfare than civil and structural engineering -- as measured by these indices. (Table 6.31)

Complaint Data: California and Comparison States

Massachusetts and California

Massachusetts is the only discipline-based licensing state that provided complaint data and is therefore the only state where the discipline distribution of complaints and outcomes can be compared. Complaint data provided by Massachusetts for the time period 7/1/83 to 10/1/01 included only closed cases. In California, some types of cases, primarily those including fraud, tend to be resolved sooner. (Table 6.20) On the assumption that there may be similar differences between open and closed cases in Massachusetts, only closed California cases were included in this portion of the analysis.

In addition, California and Massachusetts have each developed different methods of categorizing the outcomes of complaints. These differences should be considered when making comparisons between the two states. Massachusetts' cases can most easily be grouped into cases that are dismissed and those that are not dismissed. California cases are most easily grouped into cases for which no violation is determined to have occurred and those where it is determined that a violation has occurred. Some California cases that were counted as "no violation" for the purpose of computing the percentages presented in Table 6.32 were actually cases that could not be pursued because they were outside the Board's jurisdiction, there was insufficient evidence, or they were unable to locate the subject of the complaint.

Finally, the small number of complaints in Massachusetts means that the percentages are unstable for all but the largest disciplines or categories.

With these caveats, the discipline profile of complaints appears to be remarkably similar in these two states. Complaints in the two states are primarily against civil engineers (40.1% in California and 43.4% in Massachusetts) or the unlicensed (49.2% vs. 36.8%). The other practice act disciplines account for most of the remaining complaints in both states: electrical (1% in California vs. 2.8% in Massachusetts), mechanical (2% vs. 8.3%), structural (3.9% vs. 6%) and geotechnical (3.5% in California and none in Massachusetts). The biggest proportionate difference between the two states is in the proportion of complaints against traffic engineers; California's proportion (1.9%) is almost ten times that in Massachusetts (0.2%). (Table 6.32)

The percent of cases in which a violation was found to have occurred, or was not dismissed, was also fairly consistent between the two states. The major difference between the two was in the treatment of the unlicensed. California found that a violation had occurred in 78.5% of all cases involving the unlicensed while Massachusetts dismissed all but 18.1% of cases against the unlicensed. This may reflect a difference in the two states' methods of handling complaints. In Massachusetts, an Office of Investigations handles complaints for all professions. In the case of unlicensed practice, only the most serious cases are forwarded to the Attorney General. In California, the Board is the investigative agency, with some limited jurisdiction over the unlicensed. It is authorized to issue citations containing an order of abatement or an

administrative fine up to $2500 to persons who are not licensed and who are acting in the capacity of a licensee under the Board's jurisdiction. [5] (Table 6.32)

Alleged violation by discipline. The small number of cases in Massachusetts and in the title act disciplines in both states limits the comparisons that can be made in Table 6.33. The proportion of electrical and mechanical engineers charged with unlicensed activity was similar in California and Massachusetts (9.5% and 8.3% for electrical and 27.5% and 22.2% for mechanical), but the proportion of civil engineers with this charge was almost four times greater in Massachusetts than in California (12.7% vs. 3.5%). This disparity may also reflect the advantaged position of civil engineering in California conferred by the practice/title distinction. Fraud was a more frequent alleged violation in all three practice act disciplines and structural engineering in Massachusetts while competence/negligence was more frequent in these disciplines in California. (Table 6.33)

In Massachusetts, most cases are dismissed (80.5%). (Table 6.34) Unlike California, the dismissal rates are virtually the same for the unlicensed and Civil engineers (81.9% and 82.5% respectively) -- the only groups large enough for reliable comparison. Other cases in Massachusetts are settled (6.2%), the license is suspended (3.4%), revoked (2.1%) or voluntarily surrendered (3.0%). (Table 6.34) The widest range of outcomes occurs in cases where fraud, deceit or misrepresentation are charged; and, with the exception of "other" reasons for the complaint, fraud violations are least apt to be dismissed. Those charged with unlicensed activity are the most apt to be dismissed (91.8%). (Table 6.35)

California, Massachusetts and New York

Although New York provided summary data for a ten-year period, the data does not distinguish licensed and unlicensed and, as a generic licensing state, they do not track discipline. Table 6.36 provides rough comparisons between California, Massachusetts and New York on the type of alleged violation, with the most closely related categories in Massachusetts and New York included within the violation categories. Competence/negligence and unlicensed activity were two of the three most common violations in all three states. Fraud was in the top three complaints in California and Massachusetts, while "other" violations were the third most common in New York. Exam subversion was an issue only in California. Licensed engineers were three times as likely to be charged with unlicensed activity in Massachusetts -- a state with 46 licensed disciplines and no hierarchical distinctions between them -- as they were in California (14.2% vs. 4.9%). The proportion of unlicensed *engineers* charged with unlicensed activity was virtually identical in these two states (52.1% in California and 51.9% in Massachusetts). Complaints against the unlicensed in California are concentrated in two violation categories (unlicensed activity and exam subversion). Complaints against this group in Massachusetts are concentrated in unlicensed activity and fraud, but are more dispersed among the full range of allegations. (Table 6.36 and 6.37)

Complaint Rates

Complaint rates by discipline per 100,000 employed engineers. Using OES data for California and Massachusetts, the average number of complaints per 100,000 employed engineers was computed for disciplines licensed in at least one of the two states. Rates for the licensed and unlicensed used all employed engineers, including disciplines not licensed in either state. In both states, there were more complaints against civil engineers than all other

[5] *Plain Language Pamphlet of the Professional Engineers Act and the Board Rules*, Revised 6/99, Section 5, Q6a.

disciplines combined. Complaints against civil engineers were 75% higher in California than in Massachusetts (327 vs. 187 per 100,000 employed engineers). Conversely, there were 141% more complaints against mechanical engineers in Massachusetts than in California. Rates for chemical, electrical and industrial were also higher in Massachusetts, while rates for metallurgical (California) or materials (Massachusetts) engineering was higher in California. The overall rate for complaints against licensed engineers was almost 60% higher in California (44 vs. 28), while that for the unlicensed was more than twice as high in California (43 vs. 16 per 100,000). Total complaints were almost exactly twice as high in California (87 vs. 44 in Massachusetts). (Table 6.38)

The higher complaint rates in California, particularly among the unlicensed, may be related to the state's regulatory structure. California, as a “board” state, vests more control over the licensing and complaint process in the Board, while Massachusetts, as an “agency” state, vests control over complaints in an Office of Investigations that governs all professions. Exercise of the disciplinary and enforcement function both expresses and justifies the Board's authority. Since none of the comparison states were able to provide information regarding complaint source, there is no way to determine whether or not California is unusual in having almost half of all complaints filed by the Board. It would be interesting to know if this is typical of other “board” states. One of the reasons for the high rate of board-initiated complaints in California is its use of exam subversion, a charge that does not appear in the other states. Exam subversion constitutes a majority of board-filed complaints.

Complaint rates per 100,000 registered engineers. Useable complaint data was collected directly from two comparison states that cooperated with ISR's request (Massachusetts and New York). North Carolina provided data that could not be used because it included land surveyors. North Carolina and Texas provided revisions of numbers published in the National Society for Professional Engineers' (NSPE) summary reports. The NSPE numbers for several of the comparison states (California, Massachusetts, New York, Ohio and Texas) were duplicated for fiscal years 97/98 and 99/00 and the NSPE numbers for Texas appeared to be extremely high. When ISR contacted the Texas board, ISR was informed that the numbers reported for Texas included all telephone calls in the number of total complaints. The Texas board then provided ISR with numbers that excluded the phone calls and that were therefore more comparable to the data provided by the other states. The remaining six states, for a variety of reasons, could not provide the information.

Initially, it was hoped that rate comparisons could be extracted from the NSPE summary reports for all of the comparison states. However, only six of the ten comparison states had data reported in the NSPE summary (the four listed above plus Ohio and Florida). The numbers provided by some of these states did not match those published by NSPE. One reason for this may be that although NSPE identifies disciplinary actions as those taken against licensed engineers and enforcement actions as those taken against *unlicensed* engineers, they include unlawful practice complaints, which can involve licensed engineers practicing outside their area of competence, in their summary of "enforcement" actions. Individual states (California and Massachusetts) include unlicensed activity by licensed engineers as a reason for *disciplinary* action, furthering the confusion between unlicensed activity and the licensing status of individuals. This explanation did not explain all of the variation observed between state and NSPE figures. In the end, ISR could not reconcile the numbers provided by the states and those printed in the NSPE reports.

Other variations in state practices make interstate comparisons inexact. States vary in the definition of a fiscal year and one, New York, provided data for the calendar year. Several

states, including Massachusetts, code actions taken in response to a complaint while California codes "violations identified" but does not provide a case by case description of the outcome or action taken. Three of the four states provided information on all complaints, while Massachusetts sent information on closed complaints only. Where possible, California's data was adjusted to provide the appropriate comparisons in Table 6.39.

In fiscal year 97/98, California's complaint rate per 100,000 registered engineers was roughly half that of New York and North Carolina and one fourth that of Texas. In 99/00, California's rate was still the lowest, but New York's surpassed Texas, which dropped by more than half. Although lowest in total number of complaints, California was second lowest, after New York, in the number of disciplinary actions per 100,000 registered engineers. Texas has the highest rate of disciplinary actions in both years. (Table 6.39, top panel) California's rate for *closed* complaints was higher than Massachusetts' in three of the four years. The rate of disciplinary actions was much higher in California in all four years. It may be coincidental that the two agency-dominated states (New York and Massachusetts) have the lowest rates of disciplinary actions; but each state has a single investigative agency that deals with complaints against all professions. (Table 6.39)

Complaint rates per 100,000 employed engineers. The rate of complaints against unlicensed subjects was lowest in California in 97/98, but lowest in North Carolina in 99/00. New York was highest in both years. This may be partially explained by their inclusion of illegal practice complaints, which can encompass unlicensed activity by licensed engineers. New York also had the highest rate of enforcement actions against the unlicensed in 97/98 (38.6 per 100,000 employed engineers). California had the highest rate in 1999/2000 (32.2 per 100,000) but the number of enforcement actions for New York and North Carolina was very small. (Table 6.40)

Table 6.1. Percentage Distribution of Number of Claims, Claim Dollars and Client Fees by Discipline, DPIC 1996 - 2000

Engineering Discipline	Number of Claims	Claim Dollars	Client Fees
Civil	25.7%	21.5%	29.0%
Structural	11.3%	16.1%	6.7%
Mechanical	8.2%	7.6%	8.8%
Electrical	2.1%	1.0%	4.2%
Other	10.7%	9.9%	11.8%
Architecture	42.0%	44.0%	39.6%
Total	100.0%	100.0%	100%

Table 6.2. Percentage Distribution of Claims and Claim Dollars for Types of Damages by Engineering Discipline, DPIC 1996 - 2000

		Engineering Discipline[a]			
	Type of Damages	Civil	Structural	Mechanical	Electrical
Number of Claims	Economic loss	46%	40%	51%	57%
	Property damage	39%	47%	39%	28%
	Bodily injury – other	10%	6%	7%	9%
	Bodily injury – construction	3%	6%	2%	4%
	Total[b]	98%	99%	99%	98%
Claims Dollars	Economic loss	53%	41%	56%	42%
	Property damage	29%	45%	31%	42%
	Bodily injury – other	13%	7%	10%	14%
	Bodily injury – construction	3%	6%	3%	3%
	Total[b]	98%	99%	100%	101%

[a] Data on “other” disciplines was not included in the PowerPoint presentation.

[b] Percentages provided in the PowerPoint presentation do not always sum to exactly 100%, most likely this is due to either rounding error or the omission of some types of damages.

Table 6.3. Percentage Distribution of Claims and Claim Dollars for Suing Parties by Engineering Discipline, DPIC 1996 - 2000

		Engineering Discipline[a]			
	Suing Party	Civil	Structural	Mechanical	Electrical
Number of Claims	Contractor or subcontractor	13%	11%	11%	15%
	Third party	33%	25%	13%	21%
	Owner/client	51%	62%	72%	60%
	Total[b]	97%	98%	96%	96%
Claims Dollars	Contractor or subcontractor	14%	13%	6%	6%
	Third party	27%	26%	15%	21%
	Owner/client	56%	61%	79%	72%
	Total[b]	97%	100%	100%	99%

[a] Data on “other” disciplines was not included in the PowerPoint presentation.

[b] Percentages provided in the PowerPoint presentation do not always sum to exactly 100%, most likely this is due to either rounding error or the omission of some categories of suing parties.

Table 6.4. Percentage Distribution of Claims, Claim Dollars and Fees by Project Type and Engineering Discipline, DPIC 1996 - 2000

	Engineering Discipline[a]											
	Structural			Civil			Mechanical			Electrical		
Project Type	Claims	Dollars	Fees	Claims	Dollars	Fees	Claims	Dollars	Fees	Claims	Dollars	Fees
Bridges, trestles	2%	2%	5%	1%	2%	3%						
Correctional										5%	1%	1%
Comm.l/ind <9 stories	12%	7%	26%	6%	4%	8%	12%	9%	33%	14%	16%	21%
High rise, >9 stories							3%	3%	1%			
Hospitals							12%	12%	8%	10%	8%	4%
Malls, retail	4%	4%	5%	4%	2%	5%	2%	1%	5%			
Residential	18%	10%	7%	21%	20%	20%				6%	15%	1%
Residential condos	9%	11%	1%	5%	2%	1%				5%	2%	1%
Residential subdivisions												
Roads, highways				14%	11%	26%						
Schools through grade 12												
Schools, colleges, universities	8%	8%	12%				22%	23%	17%	14%	6%	7%
Wastewater, sewage & water treatment systems				18%	25%	8%						
Total[b]	53%	42%	56%	69%	66%	71%	51%	48%	64%	54%	48%	34%

[a] Data on “other” disciplines was not included in the PowerPoint presentation.

[b] Percentages provided in the PowerPoint presentation sum to much less than 100%, most likely this is due to the exclusion of several project type categories.

Table 6.5. Fiscal Year in which Complaint Case Was Opened by Type of License Held by Subject of Complaint (California)

	Percent of Complaints				*Number of Cases*			
FY in which case was opened*	Professional Engineers	Unlicensed Subjects	Land Surveyors	Total	Professional Engineers	Unlicensed Subjects	Land Surveyors	Total
90/91 (partial)	40.1%	44.1%	15.8%	100.0%	*61*	*67*	*24*	*152*
91/92	42.3%	48.4%	9.3%	100.0%	*132*	*151*	*29*	*312*
92/93	48.6%	39.0%	12.4%	100.0%	*121*	*97*	*31*	*249*
93/94	35.0%	48.9%	16.1%	100.0%	*63*	*88*	*29*	*180*
94/95	42.8%	47.0%	10.2%	100.0%	*101*	*111*	*24*	*236*
95/96	47.3%	41.8%	11.0%	100.0%	*129*	*114*	*30*	*273*
96/97	28.2%	23.1%	48.7%	100.0%	*89*	*73*	*154*	*316*
97/98	45.7%	28.4%	25.9%	100.0%	*106*	*66*	*60*	*232*
98/99	42.9%	46.6%	10.5%	100.0%	*82*	*89*	*20*	*191*
99/00	45.3%	38.4%	16.3%	100.0%	*111*	*94*	*40*	*245*
00/01	53.1%	36.0%	10.9%	100.0%	*137*	*93*	*28*	*258*
01/02 (partial)	61.4%	20.5%	18.1%	100.0%	*51*	*17*	*15*	*83*
Overall	43.4%	38.9%	17.7%	100.0%	*1,183*	*1,060*	*484*	*2,727*

* This table includes all California complaint cases opened between 1/7/91 and 10/19/01. This means the first and last fiscal year categories shown are actually only *partial* fiscal years. The data shown here describes the last six months of FY 90/91 and the first 3.6 months of FY 01/02. These cases were included in the following analysis to help provide a larger and more reliable set of cases.

Table 6.6. Cases Used for Analysis: Category of Code Section Allegedly Violated by Type of License Held by Subject of Complaint (California)

		Subject of Complaint			
Category of Code Section Allegedly Violated		Professional Engineers	Unlicensed Subjects	Land Surveyors	Total
General DCA Provisions		*6*		*1*	*7*
Board Rules		*18*	*475*	*1*	*494*
Professional Engineers Act		*865*	*479*	*8*	*1,352*
Professional Engineers Act and:	General DCA provisions	*2*			*2*
	Board Rules	*2*			*2*
	Professional Land Surveyors Act	*7*	*12*	*2*	*21*
Professional Land Surveyors Act		*283*	*94*	*472*	*849*
Total		*1,183*	*1,060*	*484*	*2,727*
Cases Used for Analysis		*1,183*	*966*	*0*	*2,149*

Table 6.7. Type of Engineering License Held by Subject of Complaint and Source of Complaint by Fiscal Year in which Case Was Opened (California)

			Fiscal Year in which Case Was Opened											
		Overall	90/91	91/92	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02
Type of engineering license held by subject of complaint[a]	Civil	43.0%	36.4%	38.3%	46.2%	35.8%	38.2%	42.5%	45.3%	50.6%	42.7%	48.7%	41.4%	60.6%
	Agricultural	.2%	.0%	.4%	.0%	.0%	.0%	.0%	.0%	.0%	.6%	1.0%	.0%	.0%
	Control Systems	.4%	1.7%	.4%	.5%	1.4%	.5%	.9%	.0%	.0%	.0%	.0%	.0%	.0%
	Electrical	1.0%	1.7%	1.1%	1.4%	1.4%	1.4%	.0%	.0%	1.2%	1.9%	.5%	.9%	.0%
	Fire Protection	.1%	.0%	.0%	.0%	.0%	.0%	.0%	.6%	.0%	.0%	.0%	.9%	.0%
	Geotechnical	4.2%	5.8%	4.9%	5.7%	2.7%	2.4%	3.5%	2.5%	5.9%	2.5%	3.1%	6.3%	4.5%
	Mechanical	2.1%	3.3%	1.5%	1.9%	.7%	3.4%	2.2%	.6%	.6%	.6%	3.7%	3.6%	4.5%
	Metallurgical	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.5%	.0%	.0%
	Nuclear	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.5%	.0%
	Quality	.2%	.0%	.4%	.0%	.0%	.0%	.0%	.6%	.6%	.6%	.0%	.5%	.0%
	Safety	.1%	.0%	.0%	.0%	.0%	.0%	.4%	.0%	.6%	.0%	.0%	.0%	.0%
	Structural	4.3%	3.3%	3.8%	2.4%	.7%	3.9%	7.0%	6.8%	3.5%	3.2%	3.1%	6.8%	9.1%
	Traffic	1.9%	.8%	.8%	.0%	.7%	.0%	.4%	2.5%	14.7%	1.3%	.5%	1.8%	.0%
	Unlicensed	45.0%	49.6%	50.4%	42.9%	57.4%	51.2%	43.4%	44.7%	37.6%	47.8%	41.9%	38.3%	22.7%
	Number of cases	*2,149*	*121*	*266*	*212*	*148*	*207*	*228*	*161*	*170*	*157*	*191*	*222*	*66*
Category of license held by subject of complaint	Practice Act/Title Authority only	52.0%	47.9%	47.7%	56.6%	40.5%	48.3%	54.8%	51.6%	46.5%	49.7%	56.0%	58.1%	77.3%
	Civil and Traffic	1.7%	.8%	.4%	.0%	.7%	.0%	.4%	2.5%	14.1%	.6%	.5%	.9%	.0%
	Other Practice Act/Title Authority & Title Act	.5%	.8%	.8%	.5%	.0%	.0%	.0%	.6%	1.2%	.6%	1.0%	.0%	.0%
	Title Act only	.9%	.8%	.8%	.0%	1.4%	.5%	1.3%	.6%	.6%	1.3%	.5%	2.7%	.0%
	Unlicensed	45.0%	49.6%	50.4%	42.9%	57.4%	51.2%	43.4%	44.7%	37.6%	47.8%	41.9%	38.3%	22.7%
	Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Number of cases	*2,149*	*121*	*266*	*212*	*148*	*207*	*228*	*161*	*170*	*157*	*191*	*222*	*66*
Source of complaint	Public (consumer)	50.0%	55.4%	54.1%	58.0%	52.0%	38.2%	53.9%	44.1%	41.2%	52.2%	56.5%	43.7%	51.5%
	Internal (Board)	39.0%	36.4%	39.1%	34.9%	39.2%	50.2%	39.9%	35.4%	53.5%	35.7%	33.5%	36.9%	21.2%
	Other California agency (not DCA)	.1%	.8%	.4%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.5%	.0%	.0%
	Another state (not California)	.1%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.9%	1.5%
	Federal government	.3%	.8%	.4%	.0%	.7%	.0%	.0%	.6%	.0%	.6%	.0%	.5%	.0%
	Other government agency (not State or Federal)	5.4%	6.6%	4.1%	4.2%	6.1%	2.9%	2.2%	8.1%	2.9%	6.4%	7.3%	10.4%	4.5%
	Licensees	3.6%	.0%	.0%	.5%	1.4%	7.7%	1.8%	11.2%	1.2%	3.8%	2.1%	6.3%	16.7%
	Societies/trade organizations	1.1%	.0%	1.9%	2.4%	.7%	.5%	1.8%	.6%	1.2%	1.3%	.0%	.5%	3.0%
	Anonymous	.2%	.0%	.0%	.0%	.0%	.5%	.4%	.0%	.0%	.0%	.0%	.9%	1.5%
	Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Number of cases	*2,149*	*121*	*266*	*212*	*148*	*207*	*228*	*161*	*170*	*157*	*191*	*222*	*66*

[a] Each complaint case can be coded with up to two types of licenses, so the total percentages for this variable sums to more than 100%

Table 6.8. Compare California's Distribution of Complaints and Employed Engineers

		All California Complaints, 1/7/91-10/19/01		OES Estimated California Workforce, 2000	
		Number of Cases	Percent	*Number of Cases*	Percent
Practice Act	Civil[a]	*965*	44.9%	*33,340*	15.4%
	Electrical	*21*	1.0%	*64,280*	29.7%
	Mechanical	*46*	2.1%	*24,330*	11.2%
Title Authority	Geotechnical	*90*	4.2%		
	Structural	*93*	4.3%		
Title Act	Agricultural	*4*	.2%	*120*	.1%
	Chemical		.0%	*2,030*	.9%
	Control Systems	*9*	.4%		
	Corrosion		.0%		
	Fire Protection	*3*	.1%		
	Industrial		.0%	*20,360*	9.4%
	Manufacturing		.0%		
	Materials[b]	*1*	.0%	*2,270*	1.0%
	Nuclear	*1*	.0%	*1,110*	.5%
	Petroleum		.0%	*940*	.4%
	Quality	*5*	.2%		
	Safety	*2*	.1%		
Unregulated	Aerospace			*21,440*	9.9%
	Biomedical			*890*	.4%
	Health and Safety			*4,800*	2.2%
	Marine			*140*	.1%
	Mining			*810*	.4%
	Other[c]			*39,650*	18.3%
Unlicensed		*966*	45.0%		
Total		*2,149*	N/A	*216,510*	100.0%

[a] OES data for this category also Includes environmental engineers.

[b] Complaints involving registered metallurgical engineers are included under the OES category for materials engineer.

[c] The national OES does not report data for the number of engineers employed in "other" engineering disciplines. This data is only available from each state.

Table 6.9. Compare California's Distribution of Complaints and Registered Engineers

		Complaints Against Registered Engineers 1/7/91-10/19/01		Registered Engineers in California, FY 00/01	
		Number of Cases	Percent	*Number of Cases*	Percent
Practice Act	Civil	*924*	78.1%	*43,710*	51.4%
	Electrical	*21*	1.8%	*8,312*	9.8%
	Mechanical	*46*	3.9%	*14,646*	17.2%
Title Authority	Geotechnical	*90*	7.6%	*865*	1.0%
	Structural	*93*	7.9%	*3,148*	3.7%
Title Act	Agricultural	*4*	.3%	*280*	.3%
	Chemical			*2,121*	2.5%
	Control Systems	*9*	.8%	*2,363*	2.8%
	Corrosion			*488*	.6%
	Fire Protection	*3*	.3%	*865*	1.0%
	Industrial			*845*	1.0%
	Manufacturing			*1,362*	1.6%
	Metallurgical	*1*	.1%	*418*	.5%
	Nuclear	*1*	.1%	*980*	1.2%
	Petroleum			*476*	.6%
	Quality	*5*	.4%	*1,717*	2.0%
	Safety	*2*	.2%	*1,115*	1.3%
	Traffic	*41*	3.5%	*1,372*	1.6%
Total		*1,183*	N/A	*85,083*	100.0%

Table 6.10. Percentage Distribution of California's Employed Engineers[a] by Industry, 1998

		Industry			
		Engineering & Architecture	Government	Corporation	Total
Practice Act Disciplines	Civil, including traffic	36.7%	56.3%	6.9%	100.0%
	Electrical	6.1%	12.3%	81.6%	100.0%
	Mechanical	19.0%	4.7%	76.3%	100.0%
Title Act Disciplines	Chemical	6.7%	.0%	93.3%	100.0%
	Industrial	2.4%	1.6%	96.0%	100.0%
	Metallurgical	.0%	.0%	100.0%	100.0%
	Nuclear	.0%	.0%	100.0%	100.0%
	Petroleum	.0%	.0%	100.0%	100.0%
All Other Disciplines		8.3%	10.8%	81.0%	100.0%

[a] Data from 1998 was taken from State Occupation Employment Statistics Survey.

Table 6.11. Distribution of Licenses Held by Complaint Subjects (California)

			Second License							
		No Second License	Mechan-ical	Agri-cultural	Control Systems	Fire Protection	Quality	Safety	Traffic	Total
Practice Act Disciplines	Civil	872	10	4			1	1	36	924
	Electrical	18	1		2					21
	Mechanical	34			1					35
Title Authorities	Geotechnical	90								90
	Structural	92				1				93
Title Act Disciplines	Control Systems	6								6
	Fire Protection	2								2
	Metallurgical	1								1
	Nuclear	1								1
	Quality	4								4
	Safety	1								1
	Traffic	5								5
Unlicensed		966								966
Total		2,092	11	4	3	1	1	1	36	2,149

Table 6.12. Distribution of Cases in License Categories (California)

	:	Percent	*Number of Cases*
Type of Licenses `Held	Practice Act or Title Authority only	52.0%	*1,117*
	Civil and Traffic	1.7%	*36*
	Other PracticeAct /Title Authority & Title Act	.5%	*10*
	Title Act only	.9%	*20*
	Unlicensed	45.0%	*966*
	Total	100.0%	*2,149*
Number of Licenses Held (for Licensed Engineers only)	One license	95.2%	*1126*
	More than one Practice Act license	.9%	*11*
	PracticeAct /Title Authority & Title Act	3.9%	*46*
	Total	100.0%	*1,183*

Table 6.13. Percentage Distribution of Violation Category by Source of Complaint (California)

	Source of Complaint									
Violation Category	Public (con-sumer)	Internal (Board)	Other California Agency (not DCA)	Other State (not California)	Federal Gov-ernment	Other Gov-ernment Agency	Licensees	Societies/ Trade Orga-nization	Anon-ymous	Total
Contractual	19.7%	.5%	.0%	.0%	16.7%	2.6%	2.6%	.0%	.0%	10.3%
Fraud, deceit, misrepresentation	15.5%	6.9%	33.3%	33.3%	16.7%	12.9%	9.0%	4.2%	.0%	11.7%
Competence/negligence	55.6%	11.9%	33.3%	66.7%	.0%	50.9%	32.1%	75.0%	.0%	37.4%
Exam subversion	.2%	52.9%	.0%	.0%	16.7%	.0%	.0%	.0%	.0%	20.8%
Other	.7%	2.4%	.0%	.0%	.0%	4.3%	2.6%	4.2%	.0%	1.7%
Unlicensed activity	22.0%	26.9%	33.3%	.0%	50.0%	31.9%	56.4%	16.7%	100.0%	25.9%
Number of cases	*1,075*	*839*	*3*	*3*	*6*	*116*	*78*	*24*	*5*	*2,149*

Table 6.14. Percentage Distribution of Violation Category by Fiscal Year in which Case Was Opened (California)

Violation Category	Overall	Fiscal Year in which Case Was Opened											
		90/91	91/92	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02
Contractual	10.3%	16.5%	12.8%	22.2%	10.8%	9.7%	6.6%	.0%	2.9%	7.0%	10.5%	11.7%	12.1%
Fraud, deceit, misrepresentation	11.7%	17.4%	22.6%	28.3%	16.9%	12.1%	7.5%	3.7%	3.5%	1.9%	6.8%	5.9%	3.0%
Competence/negligence	37.4%	28.9%	33.5%	34.9%	22.3%	28.0%	43.0%	47.8%	52.4%	40.1%	39.3%	34.2%	54.5%
Exam subversion[b]	22.9%	32.2%	31.6%	27.8%	29.7%	31.9%	18.9%	18.0%	20.6%	19.1%	18.3%	13.1%	.0%
Other	1.7%	.8%	1.1%	.5%	1.4%	.5%	.9%	.6%	2.9%	1.9%	2.6%	3.6%	6.1%
Unlicensed activity	23.8%	19.0%	16.2%	14.6%	26.8%	18.4%	34.2%	29.8%	18.2%	30.6%	23.0%	37.4%	25.8%
Number of cases	*2,149*	*121*	*266*	*212*	*148*	*207*	*228*	*161*	*170*	*157*	*191*	*222*	*66*

[a] Each complaint case can be coded with up to two types of violations so the total percentages for this variable sums to more than 100%

[b] Exam subversion used to be coded in the complaint database in the same category as fraud, deceit and misrepresentation. The current coding system includes it in the same category as other. For all of the analysis presented in this report, exam subversion is broken out into a separate category, based on the alleged violation of Board Rule 442.

Table 6.15. Summary Percentage Distribution of Code Section Allegedly Violated by Fiscal Year in which Case Was Opened (California)

Section of Business and Professions Code or California Code of Regulations Allegedly Violated			Over-all %	Fiscal Year in which Case Was Opened											
				90/91 %	91/92 %	92/93 %	93/94 %	94/95 %	95/96 %	96/97 %	97/98 %	98/99 %	99/00 %	00/01 %	01/02 %
General DCA Provisions	141.	Disciplinary action by foreign jurisdiction; grounds for disciplinary action in state	.4%					.5%	.4%	.6%	1.8%			.5%	1.5%
Board Rules	411.	Seal and Signature	.1%											.5%	1.5%
	442.	Examination Subversion	22.9%	32.2%	31.6%	27.8%	29.7%	31.9%	18.9%	18.0%	20.6%	19.1%	18.3%	13.1%	
Professional Engineers Act	6730.	Evidence of qualifications; registration	.2%										.5%	.9%	1.5%
	6731.1.	Civil engineering; additional authority	.0%									.6%			
	6732.	Use of seal, stamp or title by unregistered person	.5%					1.0%	.4%	.6%		.6%	1.0%	1.4%	
	6733.	Use of stamp of seal when certificate not in force	.1%				.7%						.5%		
	6735.	Preparation, signing, and sealing of civil engineering documents	.6%		.4%					2.5%		.6%	1.0%	.9%	3.0%
	6736.	Title of structural engineer	.1%							.6%		.6%			1.5%
	6736.1.	Soil engineer, soils engineer, or geotechnical engineer	.0%											.5%	
	6737.1.	Structure exemption	.0%					.5%							
	6738.	Engineering business – business name	1.7%			.5%	1.4%	9.2%	3.1%	.6%	1.2%		.5%	1.4%	
	6749.	Written Contracts	.1%											.5%	1.5%
	6755.	Examination requirements	.1%				1.4%								
	6764.	Seal or stamp	.0%											.5%	
	6775.	Complaints against Professional Engineers, including: conviction of a crime; deceit, misrepresentation or fraud; negligence or incompetence; and breach of contract	37.0%	38.8%	32.3%	39.6%	32.4%	34.3%	41.2%	35.4%	33.5%	31.8%	42.4%	38.3%	54.5%
	6787.	Acts constituting misdemeanor, include: unauthorized practice or use of title in civil, electrical, mechanical engineering; or use of the titles of professional, licensed, registered, or consulting engineer	25.5%	22.3%	24.1%	16.5%	29.7%	21.7%	27.6%	28.6%	19.4%	28.7%	24.1%	37.4%	24.2%
Professional Land Surveyors Act	8726 -8792	Numerous Business and Professions Codes from the Professional Land Surveyors Act	14.1%	9.1%	14.7%	18.4%	7.4%	6.3%	12.7%	15.5%	23.5%	19.7%	13.6%	10.8%	21.2%
Number of cases			*2,149*	*121*	*266*	*212*	*148*	*207*	*228*	*161*	*170*	*157*	*191*	*222*	*66*

Table 6.16. Detailed Percentage Distribution of Code Section Allegedly Violated by Fiscal Year in which Case Was Opened (California)

Section of Business and Professions Code or California Code of Regulations Allegedly Violated			Over-all %	Fiscal Year in which Case Was Opened												
				90/ 91 %	91/ 92 %	92 /93 %	93/ 94 %	94/ 95 %	95/ 96 %	96/ 97 %	97/ 98 %	98/ 99 %	99/ 00 %	00/ 01 %	01/ 02 %
General DCA Provisions	141.	Disciplinary action by foreign jurisdiction; grounds for disciplinary action in state	.4%					.5%	.4%	.6%	1.8%			.5%	1.5%
Board Rules	411.	Seal and Signature	.1%											.5%	1.5%
	442.	Examination Subversion	22.9%	32.2%	31.6%	27.8%	29.7%	31.9%	18.9%	18.0%	20.6%	19.1%	18.3%	13.1%	
Professional Engineers Act	6730.	Evidence of qualifications; registration	.2%										.5%	.9%	1.5%
	6731.1.	Civil engineering; additional authority	.0%									.6%			
	6732.	Use of seal, stamp or title by unregistered person	.5%					1.0%	.4%	.6%		.6%	1.0%	1.4%	
	6733.	Use of stamp of seal when certificate not in force	.1%				.7%						.5%		
	6735.	Preparation, signing, and sealing of civil engineering documents	.6%		.4%					2.5%		.6%	1.0%	.9%	3.0%
	6736.	Title of structural engineer	.1%							.6%		.6%			1.5%
	6736.1.	Soil engineer, soils engineer, or geotechnical engineer	.0%											.5%	
	6737.1.	Structure exemption	.0%					.5%							
	6738.	Engineering business -- business name	1.7%			.5%	1.4%	9.2%	3.1%	.6%	1.2%		.5%	1.4%	
	6749.	Written Contracts	.1%											.5%	1.5%
	6755.	Examination requirements	.1%				1.4%								
	6764.	Seal or stamp	.0%											.5%	
	6775.	Complaints against Professional Engineers The Board may receive and investigate complaints against registered professional engineers, and make finding thereon. By majority vote, the board may reprove, suspend for a period not to exceed two years, or revoke the certificate of any professional engineer registered under this chapter who:	.3%					.5%	.4%		.6%	1.3%	.5%		
		(a) Has been convicted of a crime substantially related to qualifications, functions and duties of a registered professional engineer	.4%			.5%	.7%	.5%	.4%	1.2%	.6%	.6%			
		(b)* Has been found guilty by the board of fraud, deceit, misrepresentation, negligence, incompetence, and or breach (or violation) of contract	34.0%	37.2%	30.8%	38.7%	28.4%	31.4%	38.6%	29.2%	30.0%	27.4%	38.2%	35.1%	51.5%
		(c)* Has been found guilty of any fraud or deceit in obtaining his or her certificate	.3%		.4%				.9%	1.2%			1.0%		
		(d)* Aids or abets any person in the violation of any provision of this chapter	2.1%	1.7%	2.3%	1.9%	2.0%	2.4%	.9%	3.7%	2.4%	1.3%	1.0%	3.6%	1.5%
		(e)* Violates any provision of this chapter	1.5%		.4%		1.4%	5.3%	.9%	.6%	.6%	2.5%	1.6%	3.2%	1.5%
		Subtotal for § 6775	37.0%	38.8%	32.3%	39.6%	32.4%	34.3%	41.2%	35.4%	33.5%	31.8%	42.4%	38.3%	54.5%
	6787.	Acts constituting misdemeanor Every person is guilty of a misdemeanor who:	.8%				2.0%	1.9%	2.6%		1.2%	.6%	.5%		
		(a) Unless exempt from registration, practices or offers to practice civil, electrical, or mechanical engineering in this state…without legal authorization	17.9%	19.8%	16.9%	13.7%	24.3%	12.1%	16.2%	18.0%	12.4%	19.7%	18.8%	27.9%	15.2%
		(b-d) Misrepresents themselves	3.9%		3.4%	3.8%	4.1%	2.4%	3.5%	7.5%	2.9%	3.2%	8.9%	3.6%	
		(e) Uses an expired, suspended, or revoked certificate issued by the board	1.7%		.8%		.7%	.5%	1.3%		.6%	1.3%		11.7%	1.5%
		(f) Represents himself or herself as, or uses the title of, registered civil, electrical or mechanical engineer	5.9%	.8%	2.3%	.9%	4.7%	4.8%	3.9%	3.1%	6.5%	19.1%	4.2%	14.0%	10.6%
		(g) Unless appropriately registered, manages or conducts as manager…any place of business from which civil, electrical, or mechanical engineering work is done	1.8%		3.0%	2.4%		1.9%			1.2%	1.9%	.5%	4.1%	9.1%
		(h-i) Uses the titles of professional, licensed, registered, or consulting engineer	4.0%	5.8%	6.4%	3.3%	4.1%	2.9%	1.3%	1.2%	2.4%	5.7%	3.7%	5.4%	10.6%
		(j) Violates any provision of this chapter	1.4%		.4%		1.4%	3.4%	1.8%	1.9%	.6%	1.9%	1.0%	2.7%	3.0%
		Subtotal for § 6787	25.5%	22.3%	24.1%	16.5%	29.7%	21.7%	27.6%	28.6%	19.4%	28.7%	24.1%	37.4%	24.2%
Professional Land Surveyors Act	8726 -8792	Numerous Business and Professions Codes from the Professional Land Surveyors Act	14.1%	9.1%	14.7%	18.4%	7.4%	6.3%	12.7%	15.5%	23.5%	19.7%	13.6%	10.8%	21.2%
Number of cases			*2,149*	*121*	*266*	*212*	*148*	*207*	*228*	*161*	*170*	*157*	*191*	*222*	*66*

* §6775 was restructured as of January 1, 200. Three separate subdivisions of the former §6775(b) were created for (b) fraud deceit, and/or misrepresentation, (c) negligence and/or incompetence, and (d) breach or violation of contract. The remaining subdivisions were adjusted to make room for the two new subdivisions -- what was previously c became e, d became f, and e became h. Since most of the cases described in this chapter were opened prior to the restructuring, those cases opened after 1/1/01 were included in the equivalent pre-1/1/01 category to permit comparison with previous years. This was done for all of the tables in this chapter. Subdivisions with an asterisk reflect the earlier wording of the section.

Table 6.17. Percentage Distribution of Code Sections Allegedly Violated by Violation Categories (California)

Section of Business and Professions Code or California Code of Regulations Allegedly Violated			Violation Categories: Contractual: Only	Contractual: and Fraud, Deceit, Misrepresentation	Contractual: and Competence/ Negligence	Fraud, Deceit, Misrepresentation: Only	Fraud, Deceit, Misrepresentation: and Competence/ Negligence	Competence/ Negligence	Exam Subversion	Other	Unlicensed Activity
General DCA Provisions	141.	Disciplinary action by foreign jurisdiction; grounds for disciplinary action in state						.6%		12.5%	
Rules of the Board	411.	Seal and Signature								6.3%	
	442.	Examination Subversion	.8%						100.0%		
Professional Engineers Act	6730.	Evidence of qualifications; registration								9.4%	.2%
	6731.1.	Civil engineering; additional authority								3.1%	
	6732.	Use of seal, stamp or title by unregistered person				1.2%					1.6%
	6733.	Use of stamp of seal when certificate not in force				.6%				3.1%	
	6735.	Preparation, signing, and sealing of civil engineering documents				.6%	1.8%	1.0%		6.3%	.2%
	6736.	Title of structural engineer				.6%					.4%
	6736.1.	Soil engineer, soils engineer, or geotechnical engineer				.6%					
	6737.1.	Structure exemption									.2%
	6738.	Engineering business -- business name	.8%			4.1%		1.6%		6.3%	3.0%
	6749.	Written Contracts	.8%			.6%					
	6755.	Examination requirements									.4%
	6764.	Seal or stamp								3.1%	
	6775.	Complaints against Professional Engineers The Board may receive and investigate complaints against registered professional engineers, and make finding thereon. By majority vote, the board may reprove, suspend for a period not to exceed two years, or revoke the certificate of any professional engineer registered under this chapter who:				.6%		.7%			
		(a) Has been convicted of a crime substantially related to qualifications, functions and duties of a registered professional engineer				1.8%		.3%		6.3%	.2%
		(b)* Has been found guilty by the board of fraud, deceit, misrepresentation, negligence, incompetence, and or breach (or violation) of contract	81.5%	52.0%	68.7%	34.5%	85.5%	67.1%		3.1%	.2%
		(c)* Has been found guilty of any fraud or deceit in obtaining his or her certificate				3.5%					.2%
		(d)* Aids or abets any person in the violation of any provision of this chapter	1.5%			11.7%	12.7%	1.5%		18.8%	
		(e)* Violates any provision of this chapter	3.1%			4.7%		2.2%		18.8%	
		Subtotal for § 6775	82.3%	52.0%	68.7%	52.0%	85.5%	70.0%	.0%	43.8%	.6%
	6787.	Acts constituting misdemeanor Every person is guilty of a misdemeanor who:				1.2%		.1%			2.8%
		(a) Unless exempt from registration, practices or offers to practice civil, electrical, or mechanical engineering in this state…without legal authorization				11.7%		.4%			73.0%
		(b-d) Misrepresents themselves	.8%			10.5%				3.1%	12.7%
		(e) Uses an expired, suspended, or revoked certificate issued by the board				1.2%	5.5%				6.5%
		(f) Represents himself or herself as, or uses the title of, registered civil, electrical or mechanical engineer				6.4%					23.4%
		(g) Unless appropriately registered, manages or conducts as manager…any place of business from which civil, electrical, or mechanical engineering work is done				1.8%				3.1%	6.9%
		(h-i) Uses the titles of professional, licensed, registered, or consulting engineer				19.9%					10.7%
		(j) Violates any provision of this chapter				2.3%		.1%			5.2%
		Subtotal for § 6787	.8%	.0%	.0%	36.8%	5.5%	.6%	.0%	6.3%	95.6%
Professional Land Surveyors' Act	8726 -8792	Numerous Business and Professions Codes from the Professional Land Surveyors' Act	16.9%	48.0%	31.3%	9.9%	14.5%	28.2%		21.9%	4.6%
Number of cases			*130*	*25*	*67*	*171*	*55*	*681*	*492*	*32*	*496*

* §6775 was restructured as of January 1, 2001. Three separate subdivisions of the former §6775(b) were created for (b) fraud deceit, and/or misrepresentation, (c) negligence and/or incompetence, and (d) breach or violation of contract. The remaining subdivisions were adjusted to make room for the two new subdivisions -- what was previously c became e, d became f, and e became h. Since most of the cases described in this chapter were opened prior to the restructuring, those cases opened after 1/1/01 were included in the equivalent pre-1/1/01 category to permit comparison with previous years. This was done for all of the tables in this chapter. Subdivisions with an asterisk reflect the earlier wording of the section.

Table 6.18. Closing Code by Fiscal Year in which Case Was Opened (California)

Closing Code			Overall	Fiscal Year in which Case was Opened											
				90/91	91/92	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02
Not closed			9.9%									3.8%	20.9%	45.9%	97.0%
No violation			25.4%	32.2%	33.5%	26.4%	23.6%	25.6%	34.2%	28.0%	23.5%	23.6%	18.8%	16.7%	
Unable to pursue	No jurisdiction		1.3%			3.8%	4.7%	3.9%	1.3%		.6%			.9%	
	Insufficient evidence		5.1%	8.3%	6.4%	6.6%	5.4%	5.8%	5.3%	6.8%	7.1%	3.8%	2.6%	1.4%	
	Unable to locate subject		.5%			.5%	3.4%	1.0%	.4%	1.2%					
	Complainant dropped complaint		.3%	.8%		.9%	.7%			.6%		.6%	0.5%		
	Subject deceased		.1%				.7%	.5%							
	Non-cooperation of complainant		.2%				.7%	.5%	.4%	.6%		.6%			
	Statute of limitations expired		.1%				.7%		.4%						
	Subtotal unable to pursue		7.7%	9.1%	6.4%	11.8%	16.2%	11.6%	7.9%	9.3%	7.6%	5.1%	3.1%	2.3%	
Violation identified	Resolved or mediated		3.4%		.8%	1.4%	1.4%	1.4%	1.3%	1.2%	2.9%	12.1%	9.4%	6.8%	1.5%
	Violation, but not serious enough to refer		.6%				1.4%	2.4%		.6%		.6%	.5%	.9%	
	Warning letter		3.5%			2.8%	3.4%	6.8%	8.8%	7.5%	4.1%	1.3%	3.1%	1.4%	
	Other		.1%					.5%		.6%					
	Board action	Citation	6.1%	9.1%	19.9%	1.9%		.5%	2.6%	5.0%	3.5%	8.3%	9.4%	5.4%	
		Compliance obtained	28.9%	9.1%	26.7%	31.1%	41.9%	42.0%	34.2%	36.0%	32.4%	35.7%	22.5%	15.8%	
		Disciplinary action (old code)	2.6%	30.6%	3.0%	4.7%									
		Subtotal board action	37.6%	48.8%	49.6%	37.7%	41.9%	42.5%	36.8%	41.0%	35.9%	43.9%	31.9%	21.2%	
	Referred	Referred to Attorney General	9.8%	9.9%	9.8%	18.9%	6.8%	7.2%	7.5%	8.1%	24.7%	6.4%	9.9%	2.3%	1.5%
		Referred to District Attorney	2.0%			.9%	5.4%	1.9%	3.5%	3.7%	1.2%	3.2%	2.1%	1.8%	
		Referred to other agency	.1%											.9%	
		Subtotal referred	11.9%	9.9%	9.8%	19.8%	12.2%	9.2%	11.0%	11.8%	25.9%	9.6%	12.0%	5.0%	1.5%
	Subtotal violation identified		57.0%	58.7%	60.2%	61.8%	60.1%	62.8%	57.9%	62.7%	68.8%	67.5%	57.1%	35.1%	3.0%
Number of cases			*2,149*	*121*	*266*	*212*	*148*	*207*	*228*	*161*	*170*	*157*	*191*	*222*	*66*

Table 6.19. Percentage Distribution of Closing Code by Source of Complaint (California)

	Source of Complaint									
Closing Code	Public (con-sumer)	Internal (Board)	Other California Agency (not DCA)	Other State (not California)	Federal Gov-ernment	Other Gov-ernment Agency	Licensees	Societies/ Trade Orga-nization	Anon-ymous	Total
Open	11.4%	4.4%	.0%	33.3%	16.7%	20.7%	25.6%	12.5%	60.0%	9.9%
No violation	38.0%	11.0%	.0%	.0%	16.7%	21.6%	20.5%	8.3%	.0%	25.4%
Unable to pursue	11.0%	3.8%	.0%	33.3%	.0%	5.2%	9.0%	8.3%	.0%	7.7%
Resolved or mediated	4.2%	3.0%	.0%	.0%	.0%	1.7%	1.3%	.0%	.0%	3.4%
Violation, but not serious enough to refer	.1%	1.2%	.0%	.0%	.0%	.0%	1.3%	.0%	.0%	.6%
Warning letter	4.2%	2.3%	.0%	.0%	.0%	6.0%	5.1%	.0%	.0%	3.5%
Other	.1%	.0%	.0%	.0%	.0%	.0%	1.3%	.0%	.0%	.1%
Board action	16.7%	65.8%	33.3%	33.3%	66.7%	26.7%	29.5%	62.5%	40.0%	37.6%
Referred to Attorney General	12.6%	6.3%	66.7%	.0%	.0%	12.9%	3.8%	8.3%	.0%	9.8%
Referred to District Attorney	1.5%	2.3%	.0%	.0%	.0%	5.2%	2.6%	.0%	.0%	2.0%
Referred to other agency	.2%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.1%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Number of cases	*1,075*	*839*	*3*	*3*	*6*	*116*	*78*	*24*	*5*	*2,149*

Table 6.20. Percentage Distribution of Closing Code by Violation Category (California)

	Violation Category						
Closing Code	Contractual	Fraud, Deceit, Mis-representation	Competence/ Negligence	Exam Subversion	Other	Unlicensed Activity	Total
Open	11.7%	5.2%	13.3%	.0%	25.0%	12.4%	9.9%
No violation	33.3%	37.5%	37.2%	4.5%	16.7%	21.9%	25.4%
Unable to pursue	14.4%	14.3%	8.3%	1.8%	8.3%	7.9%	7.7%
Resolved or mediated	8.1%	1.6%	2.9%	.0%	2.8%	5.2%	3.4%
Violation, but not serious enough to refer	.0%	.0%	.1%	1.8%	.0%	.5%	.6%
Warning letter	3.6%	2.8%	3.9%	.4%	2.8%	5.2%	3.5%
Other	.0%	.0%	.0%	.0%	.0%	.4%	.1%
Board action	14.4%	23.9%	13.6%	90.6%	19.4%	38.6%	37.6%
Referred to Attorney General	14.4%	13.5%	20.5%	.4%	25.0%	.4%	9.8%
Referred to District Attorney	.0%	1.2%	.1%	.4%	.0%	7.2%	2.0%
Referred to other agency	.0%	.0%	.0%	.0%	.0%	.4%	.1%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Number of cases	*222*	*251*	*803*	*447*	*36*	*557*	*2,149*

Table 6.21. Percentage Distribution of Source of Complaint by Type of Engineering License Held by Subject of Complaint (California)

	Type of Engineering License Held by Subject of Complaint													
	Practice Act			Title Authority		Title Act								
Source of Complaint	Civil	Electrical	Mech-anical	Geo-technical	Structural	Agri-cultural	Control Systems	Fire Protection	Metal-lurgical	Nuclear	Quality	Safety	Traffic	Un-licensed
Public (consumer)	70.6%	57.1%	45.7%	88.9%	73.1%	75.0%	44.4%	66.7%	100.0%	100.0%	20.0%	50.0%	24.4%	25.3%
Internal (Board)	15.7%	38.1%	47.8%	7.8%	18.3%	25.0%	55.6%	33.3%			40.0%	50.0%	70.7%	65.4%
Other California agency (not DCA)	.1%													.2%
Another state (not California)	.2%													.1%
Federal government	.2%										20.0%			.3%
Other government agency (not State or Federal)	8.0%	4.8%	2.2%	2.2%	3.2%								2.4%	3.6%
Licensees	3.0%		2.2%		5.4%								2.4%	4.5%
Societies/trade organizations	2.1%		2.2%	1.1%										.3%
Anonymous	.1%										20.0%			.3%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Number of cases	*924*	*21*	*46*	*90*	*93*	*4*	*9*	*3*	*1*	*1*	*5*	*2*	*41*	*966*

Table 6.22. Percentage Distribution of Source of Complaint by License Categories (California)

Source of Complaint	Practice Act Only	Civil & Traffic	Other Practice/Title Authority & Title	Title Act Only	Unlicensed	Total
Public (consumer)	72.3%	19.4%	70.0%	45.0%	25.3%	50.0%
Internal (Board)	15.0%	77.8%	30.0%	40.0%	65.4%	39.0%
Other California agency (not DCA)	.1%	.0%	.0%	.0%	.2%	.1%
Another state (not California)	.2%	.0%	.0%	.0%	.1%	.1%
Federal government	.2%	.0%	.0%	5.0%	.3%	.3%
Other government agency (not State or Federal)	7.2%	2.8%	.0%	.0%	3.6%	5.4%
Licensees	3.0%	.0%	.0%	5.0%	4.5%	3.6%
Societies/trade organizations	1.9%	.0%	.0%	.0%	.3%	1.1%
Anonymous	.1%	.0%	.0%	5.0%	.3%	.2%
Total	100.0%	100.%0	100.0%	100.0%	100.0%	100.0%
Number of cases	*1,117*	*36*	*10*	*20*	*966*	*2,149*

Table 6.23. Percentage Distribution of Violation Category by Type of Engineering License Held by Subject of Complaint (California)

	Type of Engineering License Held by Subject of Complaint												
	Practice Act			Title Authority		Title Act							
Violation Category	Civil	Electrical	Mech-anical	Geo-technical	Structural	Agri-cultural	Control Systems	Fire Protection	Metal-lurgical	Nuclear	Quality	Safety	Traffic	Un-licensed
Contractual	19.3%	9.5%	13.0%	21.1%	17.2%			33.3%					7.3%	.2%
Fraud, deceit, misrepresentation	16.5%	28.6%	23.9%	24.4%	11.8%	50.0%	33.3%	33.3%			20.0%	50.0%		4.9%
Competence/negligence	69.9%	47.6%	28.3%	68.9%	75.3%	50.0%	11.1%	33.3%	100.0%		20.0%	50.0%	85.4%	.7%
Exam subversion	1.1%	4.8%	2.2%		3.2%		22.2%						4.9%	44.4%
Other	2.4%	9.5%	8.7%	1.1%	3.2%		11.1%			100.0%	20.0%		2.4%	.1%
Unlicensed activity	3.8%	9.5%	30.4%	1.1%	3.2%		33.3%				60.0%		7.3%	51.1%
Number of cases	*924*	*21*	*46*	*90*	*93*	*4*	*9*	*3*	*1*	*1*	*5*	*2*	*41*	*966*

Table 6.24. Percentage Distribution of Violation Category by License Categories (California)

Violation Category	Practice Act Only	Civil & Traffic	Other Practice/Title Authority & Title	Title Act Only	Unlicensed	Total
Contractual	19.3%	5.6%	.0%	10.0%	.2%	10.3%
Fraud, deceit, misrepresentation	17.5%	.0%	40.0%	20.0%	4.9%	11.7%
Competence/negligence	67.5%	94.4%	60.0%	10.0%	.7%	37.4%
Exam subversion	1.3%	.0%	10.0%	15.0%	44.4%	20.8%
Other	2.8%	2.8%	.0%	15.0%	.1%	1.7%
Unlicensed activity	4.8%	2.8%	.0%	40.0%	51.1%	25.9%
Number of cases	*1,117*	*36*	*10*	*20*	*966*	*2,149*

Table 6.25. Summary Percentage Distribution of Section Allegedly Violated by Type of Engineering License Held by Subject of Complaint (California)

Section of Business and Professions Code or California Code of Regulations Allegedly Violated			Type of License Held by Subject of Complaint														
			Practice Act			Title Authority		Title Act									
			Civil	Electrical	Mechanical	Geotechnical	Structural	Agricultural	Control Systems	Fire Protection	Metallurgical	Nuclear	Quality	Safety	Traffic	Unlicensed
			%	%	%	%	%	%	%	%	%	%	%	%	%	%
General DCA Provisions	141.	Disciplinary action by foreign jurisdiction; grounds for disciplinary action in state	.6				2.2									
Rules of the Board	411.	Seal and Signature			2.2		1.1									
	442.	Examination Subversion	1.1	4.8	2.2		3.2		22.2						4.9	49.2
Professional Engineers Act	6730.	Evidence of qualifications; registration			4.3							100.0				.1
	6731.1.	Civil engineering; additional authority											20.0			
	6732.	Use of seal, stamp or title by unregistered person	.2													.8
	6733.	Use of stamp of seal when certificate not in force	.2													
	6735.	Preparation, signing, and sealing of civil engineering documents	.8		4.3	1.1	2.2									.1
	6736.	Title of structural engineer	.3													
	6736.1.	Soil engineer, soils engineer, or geotechnical engineer	.1													
	6737.1.	Structure exemption														.1
	6738.	Engineering business -- business name	1.2	4.8	8.7	2.2			11.1						2.4	1.8
	6749.	Written Contracts	.1			1.1										
	6755.	Examination requirements														.2
	6764.	Seal or stamp			2.2											
	6775.	Complaints against Professional Engineers, including: conviction of a crime; deceit, misrepresentation or fraud; negligence or incompetence; and breach of contract	64.3	81.0	52.2	90.0	82.8	100.0	44.4	100.0	100.0	100.0	40.0	100.0	14.6	.4
	6787.	Acts constituting misdemeanor, include: unauthorized practice or use of title in civil, electrical, mechanical engineering; or use of the titles of professional, licensed, registered, or consulting engineer	4.1	9.5	34.8	1.1	4.3		22.2				60.0		4.9	49.7
Professional Land Surveyors' Act	8726 -8792	Numerous Business and Professions Codes from the Professional Land Surveyors' Act	29.5		4.3	8.9	6.5								73.2	1.2
Number of cases			*924*	*21*	*46*	*90*	*93*	*4*	*9*	*3*	*1*	*1*	*5*	*2*	*41*	*966*

Table 6.26. Summary Percentage Distribution of Section Allegedly Violated by License Categories (California)

			Practice Only	Civil & Traffic	Other Practice/Title Authority & Title	Title Only	Unlicensed	Total
General DCA Provisions	141.	Disciplinary action by foreign jurisdiction; grounds for disciplinary action in state	.7%					.4%
Rules of the Board	411.	Seal and Signature	.2%					.1%
	442.	Examination Subversion	1.3%		10.0%	15.0%	49.2%	22.9%
Professional Engineers Act	6730.	Evidence of qualifications; registration	.2%			5.0%	.1%	.2%
	6731.1.	Civil engineering; additional authority				5.0%		.0%
	6732.	Use of seal, stamp or title by unregistered person	.2%				.8%	.5%
	6733.	Use of stamp of seal when certificate not in force	.2%					.1%
	6735.	Preparation, signing, and sealing of civil engineering documents	1.0%				.1%	.6%
	6736.	Title of structural engineer	.3%					.1%
	6736.1.	Soil engineer, soils engineer, or geotechnical engineer	.1%					.0%
	6737.1.	Structure exemption					.1%	.0%
	6738.	Engineering business -- business name	1.5%	2.8%		5.0%	1.8%	1.7%
	6749.	Written Contracts	.2%					.1%
	6755.	Examination requirements					.2%	.1%
	6764.	Seal or stamp	.1%					.0%
	6775.	Complaints against Professional Engineers, including: conviction of a crime; deceit, misrepresentation or fraud; negligence or incompetence; and breach of contract	68.8%	16.7%	90.0%	40.0%	.4%	37.0%
	6787.	Acts constituting misdemeanor Every person is guilty of a misdemeanor who:	5.4%	2.8%		30.0%	49.7%	25.5%
Professional Land Surveyors' Act	8726 -8792	Numerous Business and Professions Codes from the Professional Land Surveyors' Act	23.3%	77.8%		10.0%	1.2%	14.1%
Number of cases			*1,117*	*36*	*10*	*20*	*966*	*2,149*

Table 6.27. Detailed Percentage Distribution of Section Allegedly Violated by Type of Engineering License Held by Subject of Complaint (California)

			Type of Engineering License Held by Subject of Complaint														
			Practice Act			Title Authority		Title Act									
			Civil	Electrical	Mechanical	Geotechnical	Structural	Agricultural	Control Systems	Fire Protection	Metallurgical	Nuclear	Quality	Safety	Traffic	Unlicensed
			%	%	%	%	%	%	%	%	%	%	%	%	%	%
General DCA Provisions	141.	Disciplinary action by foreign jurisdiction; grounds for disciplinary action in state	.6				2.2									
Rules of the Board	411.	Seal and Signature			2.2		1.1									
	442.	Examination Subversion	1.1	4.8	2.2		3.2		22.2						4.9	49.2
Professional Engineers Act	6730.	Evidence of qualifications; registration			4.3							100.0				.1
	6731.1.	Civil engineering; additional authority											20.0			
	6732.	Use of seal, stamp or title by unregistered person	.2													.8
	6733.	Use of stamp of seal when certificate not in force	.2													
	6735.	Preparation, signing, and sealing of civil engineering documents	.8		4.3	1.1	2.2									.1
	6736.	Title of structural engineer	.3													
	6736.1.	Soil engineer, soils engineer, or geotechnical engineer	.1													
	6737.1.	Structure exemption														.1
	6738.	Engineering business -- business name	1.2	4.8	8.7	2.2			11.1						2.4	1.8
	6749.	Written Contracts	.1			1.1										
	6755.	Examination requirements														.2
	6764.	Seal or stamp			2.2											
	6775.	Complaints against Professional Engineers The Board may receive and investigate complaints against registered professional engineers, and make finding thereon. By majority vote, the board may reprove, suspend for a period not to exceed two years, or revoke the certificate of any professional engineer registered under this chapter who:	.5				1.1									
		(a) Has been convicted of a crime substantially related to qualifications, functions and duties of a registered professional engineer	.6	4.8												.1
		(b)* Has been found guilty by the board of fraud, deceit, misrepresentation, negligence, incompetence, and or breach (or violation) of contract	60.0	52.4	41.3	85.6	77.4	75.0	22.2	66.7	100.0		20.0	100.0	14.6	.3
		(c)* Has been found guilty of any fraud or deceit in obtaining his or her certificate	.3		4.3	1.1			11.1							
		(d)* Aids or abets any person in the violation of any provision of this chapter	3.2	28.6	4.3	2.2	5.4	25.0	11.1							
		(e)* Violates any provision of this chapter	2.1	4.8	8.7	2.2	3.2		11.1	33.3		100.0	20.0			.1
		Subtotal for §6775	64.3	81.0	52.2	90.0	82.8	100.0	44.4	100.0	100.0	100.0	40.0	100.0	14.6	.4
	6787.	Acts constituting misdemeanor Every person is guilty of a misdemeanor who:														1.8
		(a) Unless exempt from registration, practices or offers to practice civil, electrical, or mechanical engineering in this state…without legal authorization	2.3	9.5	23.9	1.1	3.2		22.2				40.0		2.4	35.5
		(b-d) Misrepresents themselves	.3		4.3											8.1
		(e) Uses an expired, suspended, or revoked certificate issued by the board	1.8	9.5	13.0		4.3						20.0		2.4	.7
		(f) Represents himself or herself as, or uses the title of, registered civil, electrical or mechanical engineer	.1		6.5										2.4	12.6
		(g) Unless appropriately registered, manages or conducts as manager…any place of business from which civil, electrical, or mechanical engineering work is done			6.5								20.0			3.5
		(h-i) Uses the titles of professional, licensed, registered, or consulting engineer	1.4	4.8	4.3		1.1						20.0			7.1
		(j) Violates any provision of this chapter	.1		2.2										2.4	2.9
		Subtotal for §6787	4.1	9.5	34.8	1.1	4.3		22.2				60.0		4.9	49.7
Professional Land Surveyors' Act	8726 –8792	Numerous Business and Professions Codes from the Professional Land Surveyors' Act	29.5		4.3	8.9	6.5								73.2	1.2
Number of cases			*924*	*21*	*46*	*90*	*93*	*4*	*9*	*3*	*1*	*1*	*5*	*2*	*41*	*966*

* §6775 was restructured as of January 1, 200. Three separate subdivisions of the former §6775(b) were created for (b) fraud deceit, and/or misrepresentation, (c) negligence and/or incompetence, and (d) breach or violation of contract. The remaining subdivisions were adjusted to make room for the two new subdivisions -- what was previously c became e, d became f, and e became h. Since most of the cases described in this chapter were opened prior to the restructuring, those cases opened after 1/1/01 were included in the equivalent pre-1/1/01 category to permit comparison with previous years. This was done for all of the tables in this chapter. Subdivisions with an asterisk reflect the earlier wording of the section.

Table 6.28. Detailed Percentage Distribution of Code Section Charged by License Categories (California)

Section of Business and Professions Code or California Code of Regulations Allegedly Violated			Practice Only	Civil & Traffic	Other Practice/Title Authority & Title	Title Only	Unlicensed	Total
General DCA Provisions	141.	Disciplinary action by foreign jurisdiction; grounds for disciplinary action in state	.7%					.4%
Rules of the Board	411.	Seal and Signature	.2%					.1%
	442.	Examination Subversion	1.3%		10.0%	15.0%	49.2%	22.9%
Professional Engineers Act	6730.	Evidence of qualifications; registration	.2%			5.0%	.1%	.2%
	6731.1.	Civil engineering; additional authority				5.0%		.0%
	6732.	Use of seal, stamp or title by unregistered person	.2%				.8%	.5%
	6733.	Use of stamp of seal when certificate not in force	.2%					.1%
	6735.	Preparation, signing, and sealing of civil engineering documents	1.0%				.1%	.6%
	6736.	Title of structural engineer	.3%					.1%
	6736.1.	Soil engineer, soils engineer, or geotechnical engineer	.1%					.0%
	6737.1.	Structure exemption					.1%	.0%
	6738.	Engineering business -- business name	1.5%	2.8%		5.0%	1.8%	1.7%
	6749.	Written Contracts	.2%					.1%
	6755.	Examination requirements					.2%	.1%
	6764.	Seal or stamp	.1%					.0%
	6775.	Complaints against Professional Engineers The Board may receive and investigate complaints against registered professional engineers, and make finding thereon. By majority vote, the board may reprove, suspend for a period not to exceed two years, or revoke the certificate of any professional engineer registered under this chapter who:	.5%					.3%
		(a) Has been convicted of a crime substantially related to qualifications, functions and duties of a registered professional engineer	.6%				.1%	.4%
		(b)* Has been found guilty by the board of fraud, deceit, misrepresentation, negligence, incompetence, and or breach (or violation) of contract	63.6%	16.7%	80.0%	15.0%	.3%	34.0%
		(c)* Has been found guilty of any fraud or deceit in obtaining his or her certificate	.5%			5.0%		.3%
		(d)* Aids or abets any person in the violation of any provision of this chapter	3.8%		20.0%			2.1%
		(e)* Violates any provision of this chapter	2.5%			20.0%	.1%	1.5%
		Subtotal for §6775	68.8%	16.7%	90.0%	40.0%	.4%	37.0%
	6787.	Acts constituting misdemeanor Every person is guilty of a misdemeanor who:					1.8%	.8%
		(a) Unless exempt from registration, practices or offers to practice civil, electrical, or mechanical engineering in this state…without legal authorization	3.3%	2.8%		20.0%	35.5%	17.9%
		(b-d) Misrepresents themselves	.4%				8.1%	3.9%
		(e) Uses an expired, suspended, or revoked certificate issued by the board	2.5%	2.8%		5.0%	.7%	1.7%
		(f) Represents himself or herself as, or uses the title of, registered civil, electrical or mechanical engineer	.4%			5.0%	12.6%	5.9%
		(g) Unless appropriately registered, manages or conducts as manager…any place of business from which civil, electrical, or mechanical engineering work is done	.3%			5.0%	3.5%	1.8%
		(h-i) Uses the titles of professional, licensed, registered, or consulting engineer	1.5%			5.0%	7.1%	4.0%
		(j) Violates any provision of this chapter	.2%			5.0%	2.9%	1.4%
		Subtotal for §6787	5.4%	2.8%		30.0%	49.7%	25.5%
Professional Land Surveyors' Act	8726 -8792	Numerous Business and Professions Codes from the Professional Land Surveyors' Act	23.3%	77.8%		10.0%	1.2%	14.1%
Number of cases			*1,117*	*36*	*10*	*20*	*966*	*2,149*

* §6775 was restructured as of January 1, 200. Three separate subdivisions of the former §6775(b) were created for (b) fraud deceit, and/or misrepresentation, (c) negligence and/or incompetence, and (d) breach or violation of contract. The remaining subdivisions were adjusted to make room for the two new subdivisions -- what was previously c became e, d became f, and e became h. Since most of the cases described in this chapter were opened prior to the restructuring, those cases opened after 1/1/01 were included in the equivalent pre-1/1/01 category to permit comparison with previous years. This was done for all of the tables in this chapter. Subdivisions with an asterisk reflect the earlier wording of the section.

Table 6.29. Percentage Distribution of Closing Code by Type of Engineering License Held by Subject of Complaint (California)

Closing Code			Type of Engineering License Held by Subject of Complaint													
			Practice Act			Title Authority		Title Act								
			Civil	Electrical	Mechanical	Geotechnical	Structural	Agricultural	Control Systems	Fire Protection	Metallurgical	Nuclear	Quality	Safety	Traffic	Unlicensed
All cases	Not closed		12.2%		13.0%	21.1%	16.1%					100.0%	20.0%		7.3%	5.8%
	No violation		34.0%	81.0%	37.0%	36.7%	40.9%	50.0%	66.7%	33.3%	100.0%		60.0%		12.2%	12.8%
	Unable to pursue		9.0%	4.8%	8.7%	15.6%	10.8%	25.0%	22.2%						12.2%	5.6%
	Violation identified	Resolved or mediated	3.4%			6.7%	6.5%									3.1%
		Violation, but not serious enough to refer	.1%													1.1%
		Warning letter	3.7%		4.3%	4.4%	4.3%		11.1%							3.1%
		Other														.2%
		Board action	18.1%	9.5%	19.6%	7.8%	5.4%			33.3%			20.0%		14.6%	63.8%
		Referred to Attorney General	19.4%	4.8%	17.4%	7.8%	16.1%	25.0%		33.3%				100.0%	53.7%	
		Referred to District Attorney	.2%													4.2%
		Referred to other agency														.2%
		Subtotal violation identified	44.8%	14.3%	41.3%	26.7%	32.3%	25.0%	11.1%	66.7%	.0%	.0%	20.0%	100.0%	68.3%	75.8%
	Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Number of cases		*924*	*21*	*46*	*90*	*93*	*4*	*9*	*3*	*1*	*1*	*5*	*2*	*41*	*966*
Closed cases	No violation		38.7%	81.0%	42.5%	46.5%	48.7%	50.0%	66.7%	33.3%	100.0%		75.0%		13.2%	13.6%
	Unable to pursue		10.2%	4.8%	10.0%	19.7%	12.8%	25.0%	22.2%						13.2%	5.9%
	Violation identified	Resolved or mediated	3.8%			8.5%	7.7%									3.3%
		Violation, but not serious enough to refer	.1%													1.2%
		Warning letter	4.2%		5.0%	5.6%	5.1%		11.1%							3.3%
		Other														.2%
		Board action	20.6%	9.5%	22.5%	9.9%	6.4%			33.3%			25.0%		15.8%	67.7%
		Referred to Attorney General	22.1%	4.8%	20.0%	9.9%	19.2%	25.0%		33.3%				100.0%	57.9%	
		Referred to District Attorney	.2%													4.5%
		Referred to other agency														.2%
		Subtotal violation identified	51.0%	14.3%	47.5%	33.8%	38.5%	25.0%	11.1%	66.7%			25.0%	100.0%	73.7%	80.4%
	Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%		100.0%	100.0%	100.0%	100.0%
	Number of cases		*811*	*21*	*40*	*71*	*78*	*4*	*9*	*3*	*1*		*4*	*2*	*38*	*910*

Table 6.30. Percentage Distribution of Closing Code by License Categories (California)

Closing Code			Practice Act Only	Civil & Traffic	Other Practice/Title Authority and Title	Title Act Only	Unlicensed	Total
All cases	Not closed		13.5%	2.8%	.0%	20.0%	5.8%	9.9%
	No violation		36.1%	13.9%	60.0%	35.0%	12.8%	25.4%
	Unable to pursue		9.3%	11.1%	10.0%	15.0%	5.6%	7.7%
	Violation identified	Resolved or mediated	.1%	.0%	.0%	.0%	1.1%	.6%
		Violation, but not serious enough to refer	3.8%	.0%	.0%	.0%	3.1%	3.4%
		Warning letter	3.9%	.0%	.0%	5.0%	3.1%	3.5%
		Other	.0%	.0%	.0%	.0%	.2%	.1%
		Board action	16.6%	13.9%	.0%	15.0%	63.8%	37.6%
		Referred to Attorney General	16.5%	58.3%	30.0%	10.0%	.0%	9.8%
		Referred to District Attorney	.2%	.0%	.0%	.0%	4.2%	2.0%
		Referred to other agency	.0%	.0%	.0%	.0%	.2%	.1%
		Subtotal violation identified	41.1%	72.2%	30.0%	30.0%	75.8%	57.0%
	Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Number of cases		*1,117*	*36*	*10*	*20*	*966*	*2,149*
Closed cases	No violation		41.7%	14.3%	60.0%	43.8%	13.6%	28.1%
	Unable to pursue		10.8%	11.4%	10.0%	18.8%	5.9%	8.6%
	Violation identified	Resolved or mediated	.1%	.0%	.0%	.0%	1.2%	.6%
		Violation, but not serious enough to refer	4.5%	.0%	.0%	.0%	3.3%	3.8%
		Warning letter	4.6%	.0%	.0%	6.3%	3.3%	3.9%
		Other	.0%	.0%	.0%	.0%	.2%	.1%
		Board action	19.2%	14.3%	.0%	18.8%	67.7%	41.8%
		Referred to Attorney General	19.0%	60.0%	30.0%	12.5%	.0%	10.8%
		Referred to District Attorney	.2%	.0%	.0%	.0%	4.5%	2.2%
		Referred to other agency	.0%	.0%	.0%	.0%	.2%	.1%
		Subtotal violation identified	47.5%	74.3%	30.0%	37.5%	80.4%	63.3%
	Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Number of cases		*966*	*35*	*10*	*16*	*910*	*1,937*
Cases where violation identified	Resolved or mediated		9.4%	.0%	.0%	.0%	4.1%	6.0%
	Violation, but not serious enough to refer		.2%	.0%	.0%	.0%	1.5%	1.0%
	Warning letter		9.6%	.0%	.0%	16.7%	4.1%	6.1%
	Other		.0%	.0%	.0%	.0%	.3%	.2%
	Board action		40.3%	19.2%	.0%	50.0%	84.2%	66.0%
	Referred to Attorney General		40.1%	80.8%	100.0%	33.3%	.0%	17.1%
	Referred to District Attorney		.4%	.0%	.0%	.0%	5.6%	3.5%
	Referred to other agency		.0%	.0%	.0%	.0%	.3%	.2%
	Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Number of cases		*459*	*26*	*3*	*6*	*732*	*1226*

Table 6.31. Compare Discipline Distribution of California Complaints[a] and DPIC Insurance Claims

		California Complaints		DPIC Insurance Claims	
		Percent	*Number of cases*	Percent	*Number of cases*
Practice Act	Civil	79.7%	*881*	44.3%	*2,234*
	Electrical	1.6%	*18*	3.6%	*182*
	Mechanical	2.8%	*31*	14.1%	*712*
Title Authority	Geotechnical	8.1%	*89*		
	Structural	8.1%	*90*	19.5%	*982*
Title Act	Agricultural	.4%	*4*		
	Control Systems	.4%	*4*		
	Fire Protection	.3%	*3*		
	Metallurgical	.1%	*1*		
	Nuclear	.1%	*1*		
	Quality	.3%	*3*		
	Safety	.2%	*2*		
	Traffic	3.3%	*36*		
	Other			18.5%	*930*
	Subtotal	4.9%	*54*	18.5%	*930*
Total[b]		N/A	*1,105*	100.0%	*5,040*

[a] Complaint cases involving only exam subversion or unlicensed practice, as well as cases filed against unlicensed subjects, were removed from this distribution.

[b] Subjects can hold more than one type of license, so the total sums to more than 100%

Table 6.32. Distribution of Complaint Cases and Closing Codes by Discipline for California and Massachusetts

	Percent of cases		*Number of cases*		Percent of cases in which a violation was found (CA) or which were not dismissed (MA))[c]	
	CA[a]	MA[b]	CA	MA	CA	MA
Civil	40.1	43.4	*811*	*189*	17.4	17.5
Chemical	.0	.5	*0*	*2*	N/A	.0
Control Systems	.4	.2	*9*	*1*	11.1	.0
Electrical	1.0	2.8	*21*	*12*	14.3	25.0
Fire Protection	.1	.5	*3*	*2*	66.7	.0
Geotechnical	3.5	.0	*71*	*0*	33.8	.0
Industrial	.0	1.4	*0*	*6*	N/A	33.3
Mechanical	2.0	8.3	*40*	*36*	47.5	30.6
Metallurgical	.0	.0	*1*	*0*	.0	N/A
Quality	.2	.0	*4*	*0*	25.0	N/A
Safety	.1	.0	*2*	*0*	100.0	N/A
Structural	3.9	6.0	*78*	*26*	38.5	26.9
Traffic	1.9	.2	*38*	*1*	73.7	.0
Unlicensed	49.2	36.8	*992*	*160*	78.5	18.1
Overall[d]	N/A	100.0	*2,020*	*275*	63.0	19.5

[a] This table describes all California closed cases opened between 1/1/91 and 10/19/01. This subset of cases was used to provide data comparable to Massachusetts (see following note regarding Massachusetts). Complaints against unlicensed subjects alleged to have violated only the Professional Land Surveyors Act and no other sections related to engineering were intentionally not excluded from this table, in order to provide data comparable to Massachusetts. This means that the number of closed cases California used for comparison with Massachusetts is different than the number of cases described in Tables7.5-7.30.

[b] Massachusetts has a policy of not providing information on open cases. This table describes all Massachusetts closed cases opened between 7/1/83 and 10/1/01.

[c] California and Massachusetts have each developed different methods of categorizing the outcomes of complaints, and these differences should be considered when making comparisons between the two states. Massachusetts cases can most easily be grouped into cases that are dismissed and those that are not dismissed. In Massachusetts most cases of unlicensed practice are resolve through consent agreements or dismissed. Cases of unlicensed practice are infrequently deemed serious enough to pursue criminal prosecution.

California cases can most easily be grouped into cases for which no violation is determined to have occurred and those where it is determined that a violation has occurred. Some California cases which were counted as “no violation” for the purpose of computing the percentages presented in this table were actually cases that could not be pursued because they were outside the Board’s jurisdiction, there was insufficient evidence, or they were unable to locate the subject of the complaint.

[d] The subjects of California complaint cases can hold more than one license, so the total percent sums to more than 100%.

Table 6.33. Category of Alleged Violation by Discipline for California and Massachusetts

		Type of Engineering License Held by Subject of Complaint (Grouped into California's Main Categories)															
		Practice Act			Title Authority		Title Act										
State	Category of Alleged Violation	Civil %	Electrical %	Mechanical %	Geotechnical %	Structural %	Agricultural %	Chemical %	Control Systems %	Fire Protection %	Industrial %	Metallurgical %	Quality %	Safety %	Traffic %	Unlicensed %	All %
California	Contractual	19.7	9.5	10.0	21.1	17.9				33.3					5.3	.2	9.7
	Fraud, deceit, misrepresentation	18.2	28.6	25.0	22.5	11.5	50.0		33.3	33.3			25.0	50.0		4.9	11.9
	Competence/negligence	69.5	47.6	32.5	71.8	73.1	50.0		11.1	33.3		100.0	25.0	50.0	86.8	.9	34.6
	Exam subversion	1.2	4.8	2.5		3.8			22.2	33.3					5.3	43.2	22.1
	Unlicensed activity	3.5	9.5	27.5	1.4	2.6			33.3				50.0		5.3	52.1	28.1
	Other	1.8	9.5	7.5	1.4	3.8			11.1				25.0		2.6	.2	1.4
	Number of cases	*811*	*21*	*40*	*71*	*78*	*4*		*9*	*3*		*1*	*4*	*2*	*38*	*993*	*2,020*
Massachusetts	Contractual	8.5		5.6		3.8										8.1	7.4
	Fraud, deceit, misrepresentation	30.2	41.7	44.4		23.1				50	33.3				100	23.1	28.7
	Competence/negligence	29.6	16.7	13.9		38.5		50	100		16.7					6.9	20
	Unlicensed activity	12.7	8.3	22.2		7.7				50	50					51.9	28
	Other	19	33.3	13.9		26.9		50								10.0	15.9
	Total	100	100	100		100		100	100	100	100				100	100	100
	Number of cases	*189*	*12*	*36*		*26*		*2*	*1*	*2*	*6*				*1*	*160*	*435*

Table 6.34. Percentage Distribution for the Outcome of Massachusetts' Complaint Cases by Engineering Discipline

	Type of Engineering License Held by Subject of Complaint										
Outcome	Civil	Chemical	Control Systems	Electrical	Fire Protection	Industrial	Mechanical	Structural	Traffic	Unlicensed	All
License Revoked	3.2%					33.3%	2.8%				2.1%
License Suspended	5.3%			8.3%			8.3%	3.8%			3.4%
Probation	2.1%							7.7%			1.4%
Reprimand	.5%									.6%	.5%
Voluntary Surrender	4.8%						5.6%	3.8%		.6%	3.0%
Case Dismissed	82.5%	100.0%	100.0%	75.0%	100.0%	66.7%	69.4%	73.1%	100.0%	81.9%	80.5%
Settled	1.6%			16.7%			11.1%	7.7%		10.0%	6.2%
Referred										5.6%	2.1%
Consent Agreement								3.8%			.2%
Pending Suit							2.8%			1.3%	.7%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Number of cases	*189*	*2*	*1*	*12*	*2*	*6*	*36*	*26*	*1*	*160*	*435*

Table 6.35. Percentage Distribution for the Outcome of Massachusetts' Complaint Cases by Category of Alleged Violation

Outcome	Category of Alleged Violation					All
	Contractual	Fraud, Deceit, Misrepresentation	Competence/ Negligence	Unlicensed Activity	Other	
License Revoked		5.5%	1.1%		1.5%	2.1%
License Suspended	3.1%	3.9%	3.4%		9.1%	3.4%
Probation		2.3%	3.4%			1.4%
Reprimand		.8%		.8%		.5%
Voluntary Surrender		2.3%	4.6%		9.1%	3.0%
Case Dismissed	81.3%	75.8%	81.6%	91.8%	66.7%	80.5%
Settled	12.5%	8.6%	4.6%	2.5%	7.6%	6.2%
Referred	3.1%	.8%		4.1%	3.0%	2.1%
Consent Agreement					1.5%	.2%
Pending Suit			1.1%	.8	1.5%	.7%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Number of cases	*32*	*128*	*187*	*122*	*66*	*435*

Table 6.36. Percentage Distribution of Type of Alleged Violation by License Status for California, Massachusetts and New York

California Category	Related Massachusetts Categories	Related New York Categories	California Complaints Regarding:			Massachusetts Complaints Regarding:			New York Complaints Regarding All Engineers
			Licensed Engineers	Unlicensed Engineers	All Engineers	Licensed Engineers	Unlicensed Engineers	All Engineers	
Contractual	Breach of contract	Fee dispute	18.9%	.2%	9.7%	1.8%	1.9%	1.8%	.8%
	Failure to complete work		N/A	N/A	N/A	4.0%	5.6%	4.6%	N/A
	Failure to disclose		N/A	N/A	N/A	.7%	.0%	.5%	N/A
	Unauthorized repair		N/A	N/A	N/A	.4%	.6%	.5%	N/A
	Subtotal	Subtotal	18.9%	.2%	9.7%	6.9%	8.1%	7.4%	.8%
Fraud, deceit, misrepresentation	Misrepresentation	Fraud	18.6%	4.9%	11.9%	24.0%	18.1%	21.8%	8.7%
	Unethical conduct	Fee Splitting/bribery	N/A	N/A	N/A	6.9%	2.5%	5.3%	1.5%
	Overcharging		N/A	N/A	N/A	.7%	.6%	.7%	N/A
	Misleading advertising		N/A	N/A	N/A	.4%	1.3%	.7%	N/A
	Advertising violation	Advertise/improper claim	N/A	N/A	N/A	.0%	.6%	.2%	2.4%
	Subtotal	Subtotal	18.6%	4.9%	11.9%	32.0%	23.1%	28.7%	12.6%
Competence/ negligence	Incompetence	Negligence/incompetence	67.0%	.9%	34.6%	13.1%	3.8%	9.7%	31.3%
	Inferior or improper work	Practice impaired--mental/physical	N/A	N/A	N/A	5.5%	1.9%	4.1%	.1%
	Unprofessional conduct	Recordkeeping	N/A	N/A	N/A	9.1%	1.3%	6.2%	.8%
		Improper supervision	N/A	N/A	N/A	N/A	N/A	N/A	1.0%
	Subtotal	Subtotal	67.0%	.9%	34.6%	27.7%	7.0%	20.0%	33.2%
Unlicensed activity	Operating without a license	Illegal practice--aid/abet	4.9%	52.1%	28.1%	14.2%	51.9%	28.0%	38.5%
Other	Board violation	Violation of Regents penalty	N/A	N/A	N/A	16.4%	4.4%	12.0%	1.5%
	Failure to pay taxes		N/A	N/A	N/A	1.1%	.0%	.7%	N/A
	Criminal conviction	Conviction of crime	N/A	N/A	N/A	1.1%	.0%	.7%	6.6%
	General misconduct	General dissatisfaction	N/A	N/A	N/A	.0%	.6%	.2%	4.6%
		Physical/sexual abuse	N/A	N/A	N/A	N/A	N/A	N/A	.2%
		Refusal of service	N/A	N/A	N/A	N/A	N/A	N/A	.1%
	Other	Other	2.5%	.2%	1.4%	.7%	3.8%	1.8%	1.7%
	Subtotal	Subtotal	2.5%	.2%	1.4%	19.3%	8.8%	15.4%	14.8%
Exam subversion			1.8%	43.2%	22.1%	N/A	N/A	N/A	N/A
Total*			N/A	N/A	N/A	100.0	100.0%	100.0%	100.0%
Number of cases			*1,027*	*993*	*2,020*	*275*	*160*	*435*	*1,443*

* California complaint cases can include more than one type of violation, so their total percentages sum to more than 100%, but Massachusetts and New York complaint cases are categorized with one main type of violation, which means that their total percentage do sum to 100%

Table 6.37. Percentage Distribution of Summary Categories of Alleged Violation by License Status for California, Massachusetts and New York

Category of Alleged Violation:	California Complaints Regarding:			Massachusetts Complaints Regarding:			New York Complaints Regarding All Engineers
	Licensed Engineers	Unlicensed Engineers	All Engineers	Licensed Engineers	Unlicensed Engineers	All Engineers	
Contractual	18.9%	.2%	9.7%	6.9%	8.1%	7.4%	.8%
Fraud, deceit, misrepresentation	18.6%	4.9%	11.9%	32.0%	23.1%	28.7%	12.6%
Competence/negligence	67.0%	.9%	34.6%	27.7%	6.9%	20.0%	33.2%
Unlicensed activity	4.9%	52.1%	28.1%	14.2%	51.9%	28.0%	38.5%
Other	2.5%	.2%	1.4%	19.3%	10.0%	15.9%	14.8%
Exam subversion	1.9%	43.2%	22.1%	N/A	N/A	N/A	N/A
Total[a]	N/A	N/A	N/A	100.0%	100.0%	100.0%	100.0%
Number of cases	*1,027*	*993*	*2,020*	*275*	*160*	*435*	*1,443*

[a] California complaint cases can include more than one type of violation, so their total percentages sum to more than 100%, but Massachusetts and New York complaint cases are categorized with one main type of violation, which means that their total percentage do sum to 100%

Table 6.38. Average Number of Closed Complaints Filed in California and Massachusetts per 100,000 Employed Engineers[a]

	California[c]			Massachusetts[d]		
Disciplines[b]	Average Number of Complaints	Average Number of Employed Engineers	Rate per 100,000 Employed Engineers	Average Number of Complaints	Average Number of Employed Engineers	Rate per 100,000 Employed Engineers
Aerospace	.0	17,753	.0	.0	683	.0
Agricultural	.0	130	.0	.0	0	.0
Chemical	.0	2,717	.0	.1	1,063	9.4
Civil	90.6	27,713	326.9	11.9	6,370	186.8
Electrical	2.4	60,290	4.0	.7	12,436	5.6
Environmental	.0	5,735	.0	.0	2,855	.0
Health and Safety	.3	3,193	9.4	.1	1,000	10.0
Industrial	.3	17,033	1.8	.3	5,500	5.5
Marine	.0	220	.0	.0	80	.0
Materials	.1	1,937	5.2	.0	990	.0
Mechanical	2.7	24,143	11.2	1.9	7,030	27.0
Mining	.0	503	.0	.0	170	.0
Nuclear	.0	1,000	.0	.0	63	.0
Petroleum	.0	897	.0	.0	0	.0
Subtotal for licensed engineers [e]	96.4	217,585	44.3	15.2	54,421	27.9
Unlicensed subjects [e]	92.6	217,585	42.6	8.9	54,421	16.4
Total licensed and unlicensed [e]	189	217,585	86.9	24.1	54,421	44.3

[a] Number of employed engineers is an average of all available years from1998-2000. The number of engineers is not available for all categories for all three years because of changes in the occupational classification system and suppression of confidential information. Data from 1998-2000 was taken from National Occupation Employment Statistics Survey.

[b] Disciplines listed include disciplines licensed in either California or Massachusetts that are covered by the Occupation Employment Statistics Survey.

[c] Separate California licenses were combined to match OES occupational categories. Civil includes: Civil, Traffic, Structural, Geotechnical and multiple licenses that include Civil or Structural (Civil/ Land Surveyor, Civil/ Mechanical, Civil/Quality, Civil/Safety, Civil/Traffic, Structural/Fire). Electrical includes: Electrical, Control Systems and multiple licenses that include Electrical (Electrical/Mechanical, Electrical/Control Systems). Health & Safety includes: Fire Protection, and Safety. Industrial includes Quality. Mechanical includes Mechanical and multiple licenses that include Mechanical (Mechanical/Control Systems).

[d] Separate Massachusetts licenses were combined to match OES occupational categories. Civil includes Civil, Traffic, Construction, Structural and Sanitary. Mechanical includes Mechanical, HVAC, and Acoustical. Electrical includes Electrical and Instrumentation.

[e] Rates for complaints against Licensed, Unlicensed, and Total Licensed and Unlicensed were calculated using total number of employed engineers, including OES occupations not listed in the table.

Table 6.39. Complaint Rates Against Licensed Engineers for California, Massachusetts, New York, North Carolina and Texas

			Number of Complaints	Number of Registered Engineers	Rate of Complaints per 100,000 Registered Engineers[d]	Number of Disciplinary Actions	Rate of Disciplinary Actions per 100,000 Registered Engineers
All Complaints	FY 97/98	California[a]	106	86,396	122.7	69	79.9
		New York[b]	61	25,244	241.6	11	43.6
		North Carolina[c]	31	15,212	203.8	15	98.6
		Texas	225	47,737	471.3	91	190.6
	FY 99/00	California[a]	111	85,734	129.5	52	60.7
		New York[b]	73	26,172	278.9	7	26.7
		North Carolina[c]	25	16,164	154.7	14	86.6
		Texas	97	48,092	201.7	87	180.9
Closed Complaints	FY 94/95	California[a]	101	86,235	117.1	45	52.2
		Massachusetts	15	18,063	83.0	1	5.5
	FY 95/96	California[a]	129	86,219	149.6	52	60.3
		Massachusetts	19	17,736	107.1	3	16.9
	FY 96/97	California[a]	89	87,341	101.9	44	50.4
		Massachusetts	20	18,439	108.5	3	16.3
	FY 97/98	California[a]	106	86,396	122.7	69	79.9
		Massachusetts	20	17,914	111.6	6	33.5

Table 6.40. Complaint Rates Against Unlicensed Subjects for California, New York and North Carolina

		Number of Complaints	Number of Employed Engineers[d]	Rate of Complaints per 100,000 Employed Engineers	Number of Enforcement Actions	Rate of Enforcement Actions per 100,000 Employed Engineers
FY 97/98	California[a]	64	198,440	32.3	48	24.2
	New York[b, e]	42	67,350	62.4	26	38.6
	North Carolina[c]	14	32,050	43.7	8	25.0
FY 99/00	California[a]	80	176,860	45.2	57	32.2
	New York[b, e]	39	58,730	66.4	10	17.0
	North Carolina[c]	5	25,290	19.8	3	11.9

[a] The number of disciplinary and enforcement actions for California include all cases where a violation was found because the outcome of the case was not available.

[b] New York provided information for calendar years instead of fiscal years, so data from calendar year 1997 and 1999 were used for fiscal years 1997/1998 and 1999/2000.

[c] North Carolina's fiscal year is from December of the previous year through November of the following year, so data from 1996/1997 was used for 1997/1998 and data from 1998/1999 was used for 1999/2000.

[d] Registration data came from state boards. Employment data came from 1998 and 2000 National Occupation Employment Statistics Survey.

[e] New York provided information for the number of illegal practice complaints rather than the number of complaints against unlicensed engineers.